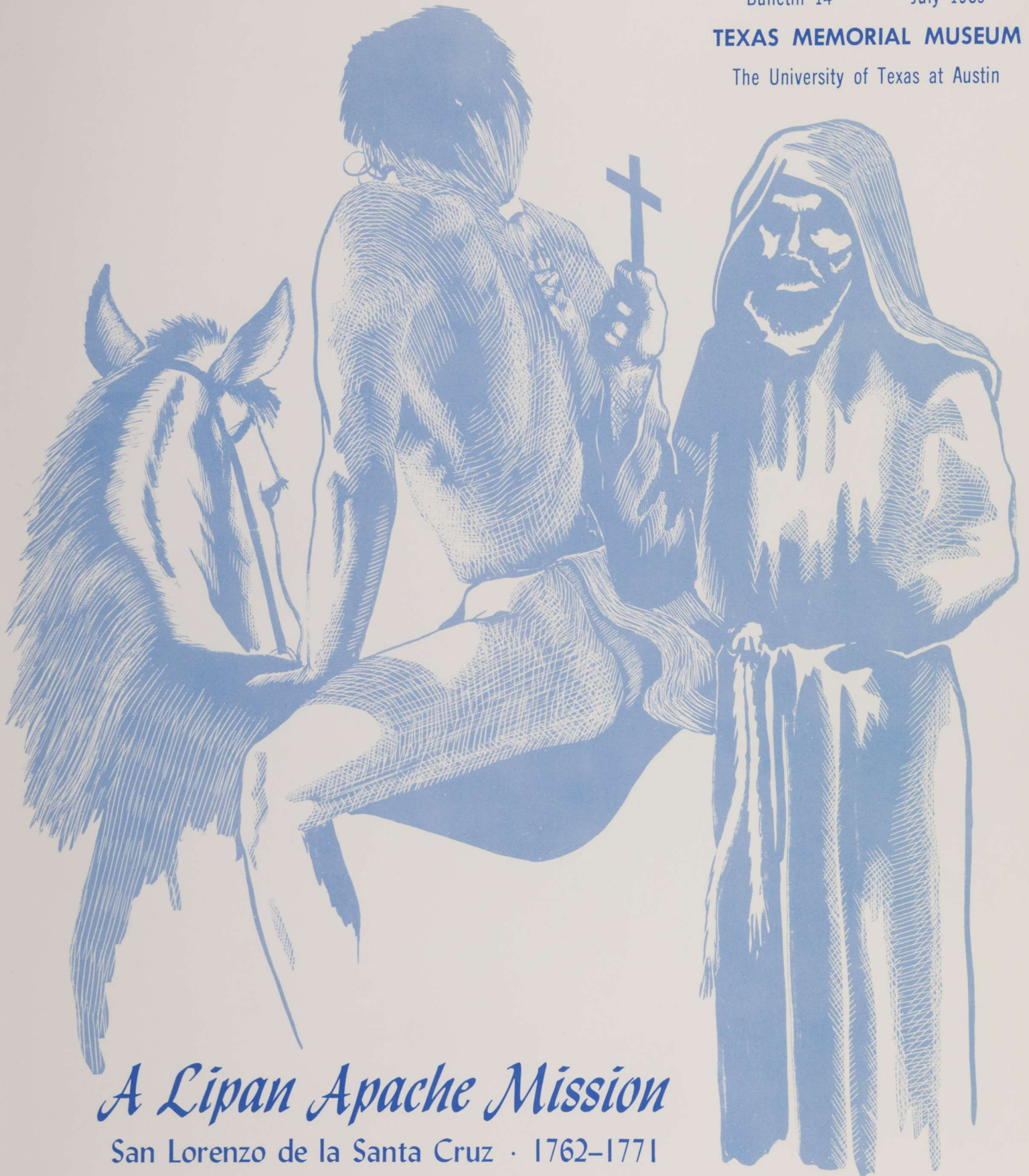


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TEXAS MEMORIAL MUSEUM

The University of Texas at Austin



A Lipan Apache Mission

San Lorenzo de la Santa Cruz · 1762-1771

By Curtis D. Tunnell and W. W. Newcomb, Jr.

BULLETIN
OF THE TEXAS MEMORIAL MUSEUM

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A Lipan Apache Mission

San Lorenzo de la Santa Cruz · 1762-1771

PART I

THE ARCHEOLOGICAL INVESTIGATION

By Curtis D. Tunnell

PART II

THE ETHNOHISTORICAL INVESTIGATION

By W. W. Newcomb, Jr.

PART III

SUMMARY AND CONCLUSIONS

THE TEXAS MEMORIAL MUSEUM

24th & Trinity, Austin, Texas 78705/The University of Texas at Austin

Preface and Acknowledgments

Mission San Lorenzo de la Santa Cruz was founded by Franciscan missionaries of the College of Querétaro in the winter of 1762 for the Lipan Apache Indians. It was situated beside a large spring on the upper Nueces River at a place known as El Cañon in what is now south-central Texas, about 40 miles north of Uvalde. A scant nine years after it was founded the mission was burned and abandoned. The missionaries and soldiers departed, never to return; occasional Indians visited the place for a few years, finding shelter against the broken walls, but they too finally disappeared. Never officially sanctioned, never successful in converting Lipan Apaches, this crude frontier mission was quickly forgotten. Its timbers rotted, tools rusted, and its adobe buildings crumbled into low mounds covered with cactus and mesquite. Eventually a new people came into the land. American soldiers set up temporary quarters near the spring and called it Camp Wood, perhaps wondering about the desolate ruins. But it was not until 1936 that historians identified the ruins for what they were, and the state of Texas in that year of its centennial erected a granite marker on the site.

In the fall of 1962, 200 years after the mission had been founded, the town of Camp Wood decided to develop the site as a tourist attraction. After bulldozers had exposed large quantities of adobe bricks, rocks, and broken pots, the Texas Memorial Museum was contacted and the archaeological and ethnohistorical investigations of the mission were begun. Over a period of several months the entire mission quadrangle was outlined, 14 structures were completely or partially excavated, and the middens adjacent to the compound were tested. At the same time, the story of the mission as it was written in letters and reports of those who were there and participated in its life was sought out in libraries and archives. This is a report on these investigations.

The ruins of Mission San Lorenzo de la Santa Cruz, now belonging to the town of Camp Wood, are enclosed by a heavy fence, the untended ruins awaiting the preservation and restoration which could breathe life into the historic moment they represent. A parking area adjacent to the site and capping of some adobe walls constitute the only improvements.

Reports about all sorts of things, from mastodon bones to two-headed calves and from wrecked ships to lost mines, are received by the museum in a slow but steady stream. But only a few of the more promising can be acted upon. When the report reached the museum that Camp Wood intended to restore Mission San Lorenzo de la Santa Cruz, and that part of the site had already been bulldozed, there was no hesitation. This was an investigation the museum had to make. The reasons for such a quick decision may not be obvious, however, particularly to those unfamiliar with the state of knowledge about Spanish missions in Texas and the Lipan Apache Indians. In 1962 no mission in Texas had been excavated utilizing the sophisticated techniques available to the modern archeologist, and this one represented an excellent opportunity to do so. San Lorenzo was a small mission and the possibility of making a relatively thorough investigation in the short time that could be allotted to it seemed good. Since San Lorenzo existed for only a few years, the various artifacts found in its ruins would serve as valuable markers for dating other historic sites containing similar objects. Archeologists have long known that some of the historic and protohistoric sites they have found and sometimes excavated in Texas were probably Lipan Apache, but they lacked positive evidence for such attribution. Since the Lipan Apaches were the only Indians attracted to San Lorenzo, the possibility seemed good that this evidence, in the form of distinctive Lipan Apache remains, would be found. The history of the Lipan Apaches, and particularly their relationship to the Spaniards, had been so distorted by the ethnocentric bias of some scholars that it was hardly comprehensible. A fresh and hopefully more objective appraisal of the history of the Lipan Apaches promised to shed light on their clouded past. We also were aware that there were a number of documents in The University of Texas Archives, never carefully scrutinized by anthropologists, which dealt with the mission and the Lipans. It seemed likely that they would add to our knowledge of the Lipans and the mission. Finally, this joint archeological-ethnohistorical investigation seemed a good way of finding out how mutually beneficial such a

combined approach actually would be. On the one hand, we likely would find the adobe brick, the potsherd, and the glass bead; on the other, the written word of the men who laid the brick, broke the pot, and buried the Indian who wore the bead. Surely these different kinds of data could be put together in such a manner as to recreate the past more fully and effectively than had ever been done before, at least so far as missions established by the Spanish for Texas Indians were concerned.

No doubt there are several good ways to present the results of investigations such as ours. After several false starts we adopted the organization this report has now as the best one for our purposes. We have jointly written this *Preface*; Part I was written by Curtis D. Tunnell and Part II by W. W. Newcomb, Jr. Part III, *Conclusions and Summary*, is again a joint effort. Our aim has been to write the story of the Lipan Apaches and Mission San Lorenzo de la Santa Cruz in a way that will be interesting and informative. We also have attempted to satisfy the special interests and demands of professional anthropologists whether they be archeologists or ethnologists, by including the detailed descriptions, discussions, and citations as unobtrusively as possible. We do this in the conviction that the findings of anthropological investigations can be written for the edification and information of both lay and professional readers.

Many people have contributed significantly to the San Lorenzo investigations. James Greer of Camp Wood has worked for many years through the Camp Wood Mission Association and the Texas Old Missions Restoration Association for the preservation of Mission San Lorenzo de la Santa Cruz. A. J. and Mary Thompson of Camp Wood generously donated the south portion of the mission site to the city of Camp Wood as a historic park in an effort to preserve the ruins. Mr. and Mrs. A. W. Mitchell of Camp Wood permitted excavation of the north portion of the ruins which lay on their property. Mr. J. E. Bruce, who lives near the site, was helpful throughout the excavation and arranged for temporary preservation of the foundations in the south part of the site. Other local residents who helped during the investigation include T. W. Priest, L. J. Dean, J. A. Boone, and Clarence Nelson. C. A. Nielsen, owner of the Rapid Aero

Service in Uvalde, Texas, generously furnished aerial photographic and reconnaissance services.

Special thanks are due Edward B. Jelks, whose encouragement and support led to the archeological investigation of Mission San Lorenzo. The field excavations could not have been carried out without the hard work and keen observations of Lathel F. Duffield. Among those who donated skilled assistance in the field were Dee Ann Story, John Greer, Bob and Alice Benfer, Claude Bramblett, Dessamae and Paul Lorrain, Glen Greene, Mark Parsons, Terence Grieder, and Ernest Lundelius. Local men employed during the excavation were L. W. Welch, Enemcio Falcon, Cayetano Falcon, Castulo San Miguel, and Jose Gonzales.

Hal M. Story of the Texas Memorial Museum made the drawing of the artifacts and the sketches of the reconstructed structures. Nancy L. Kott drafted many of the measured drawings and helped edit Part I. Marilyn Deneke typed the original draft of Part I, and Catheryn Peoples prepared the final manuscript of Part I, including many of the tables. Gene Renner Mobley drafted Figures 1 and 3. Thomas W. McKern, then at The University of Texas, analyzed the skeletons and prepared Appendix A. Gerald G. Raun, then Curator of Zoology at the Texas Memorial Museum, identified the species represented by the food bones from the structures and middens (Appendix B). Hugh Cutler, Executive Director of the Missouri Botanical Gardens, furnished an analysis of the charred corn from the granary and identified the seeds. The cloth fragments from the burials were examined and identified by F. E. Petzel, Professor of Home Economics at the University.

Graciela Garza and Martha Cotera were important to the ethnohistoric investigation, searching out and translating many documents. Chester Kielman, Director of The University of Texas Archives, gave enthusiastic help and encouragement to the ethnohistoric investigation. Willena C. Adams of the museum staff edited the entire manuscript. Louise Glass and Mary Carnahan typed the several drafts of Part II.

Finally, the prompt financial assistance given us by the Research Institute of The University of Texas at Austin made this investigation possible. We are most grateful for this help.

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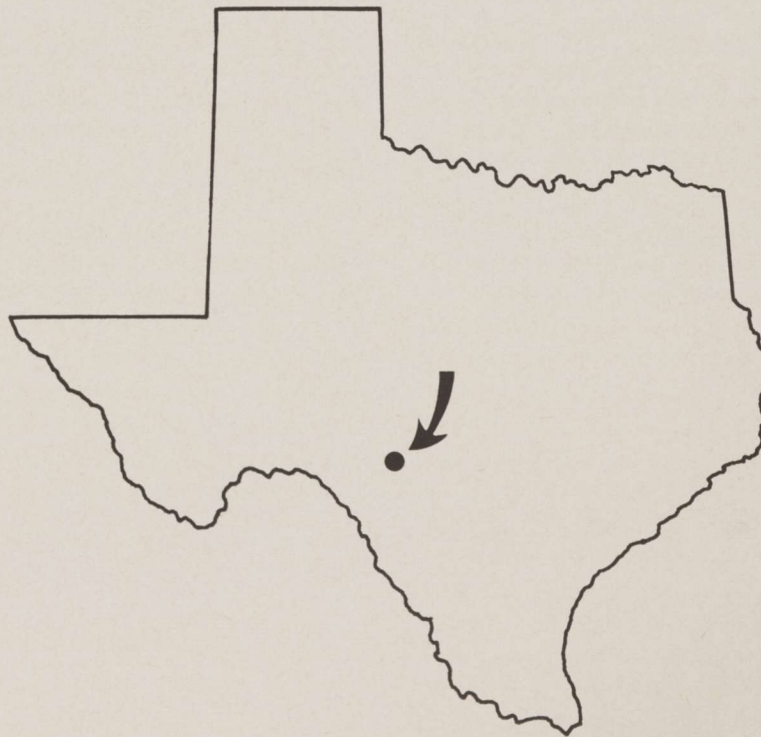
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PART I

THE ARCHEOLOGICAL INVESTIGATION

CURTIS D. TUNNELL



The Site

The ruins of Mission San Lorenzo de la Santa Cruz are located on a low ridge which runs parallel to the east bank of the Nueces River just below the mouth of a spring-fed tributary, at the north edge of the city of Camp Wood, Real County, Texas, at approximately $29^{\circ} 40' 40''$ N. latitude and $100^{\circ} 01' 00''$ W. longitude. The spring-fed Nueces is never dry here near its headwaters, and despite severe periodic flooding, the highest recorded floods have never covered the mission ruins. A large spring rises from the limestone bedrock some 500 feet northeast of the mission and flows into the Nueces about 200 feet west of the quadrangle wall. Flowing at a constant rate of approximately 2,000 gallons per minute, it serves as the water source for the city of Camp Wood. The spring influenced the selection of this site for the mission and furnished an abundant supply of fresh water during its occupation.

The excellence of this locality as a habitation spot is demonstrated by evidences of a series of occupations. (1) Archaic and Neo-American burned rock middens, many feet in thickness, are scattered around the vicinity, and a few artifacts from these aboriginal occupations were found beneath the floors of some of the mission structures. (2) The mission occupied the ridge during the 1760's, leaving hundreds of tons of construction materials and midden debris to mark its existence. (3) The ruins of the burned out mission apparently saw intermittent occupation by small Indian groups (possibly some Lipans occasionally returned to the familiar spot) in the late eighteenth and early nineteenth centuries; a hearth in the fill of Structure 8 belonged to one such visit. (4) A temporary United States military outpost (Camp Wood) occupied part of the mission site intermittently between 1857 and 1861 (Webb, 1952, I: 285). Artifacts from these camps were found around and in the fill of some of the mission structures and on the surface of the ridge farther to the south. (5)

Local legend tells of a sheepherder and his family who camped among the mission ruins in the latter part of the nineteenth century; a hearth and other artifacts in the upper fill of Structure 10 possibly represent this occupation. (6) Early Anglo-American house foundations and debris are found to the north and south of the mission site. (7) Houses on the outskirts of the present city of Camp Wood are scattered around the old mission ruins and the spring-fed tributary.

The primary concern here is with the Franciscan Mission, San Lorenzo de la Santa Cruz, established on this site by the Spanish in the latter half of the eighteenth century. By 1962, 200 years after its establishment, the walls of Mission San Lorenzo had fallen into irregular low mounds of crumbled adobe. Cactus, scrubby grass, and mesquite brush covered the uneven surface. Aside from a granite monument alongside State Highway 55, east of the site, there was little to indicate its presence.

The southern portion, comprising about 70 per cent of the site, had been thoroughly leveled by machinery when a Texas Memorial Museum field crew began work at Mission San Lorenzo in the fall of 1962. Its surface was strewn with crushed adobe bricks and Spanish colonial artifacts, and large numbers of undressed limestone building blocks had been gathered from the surface and stacked in long piles. Since no walls or foundations were visible among the debris it was feared that most of the site had been destroyed, but fortunately most of the floors were intact. The northern 30 per cent of the site, on another property, was undisturbed, and the lower walls and floors of the mission structures in this area were protected by low mounds of melted adobe and native vegetation.

Excavation Procedure

A grid system, oriented with magnetic north, was established over the entire site, and the nu-

Mission San Lorenzo

Contour map of the site
showing the location of
the compound and
associated features

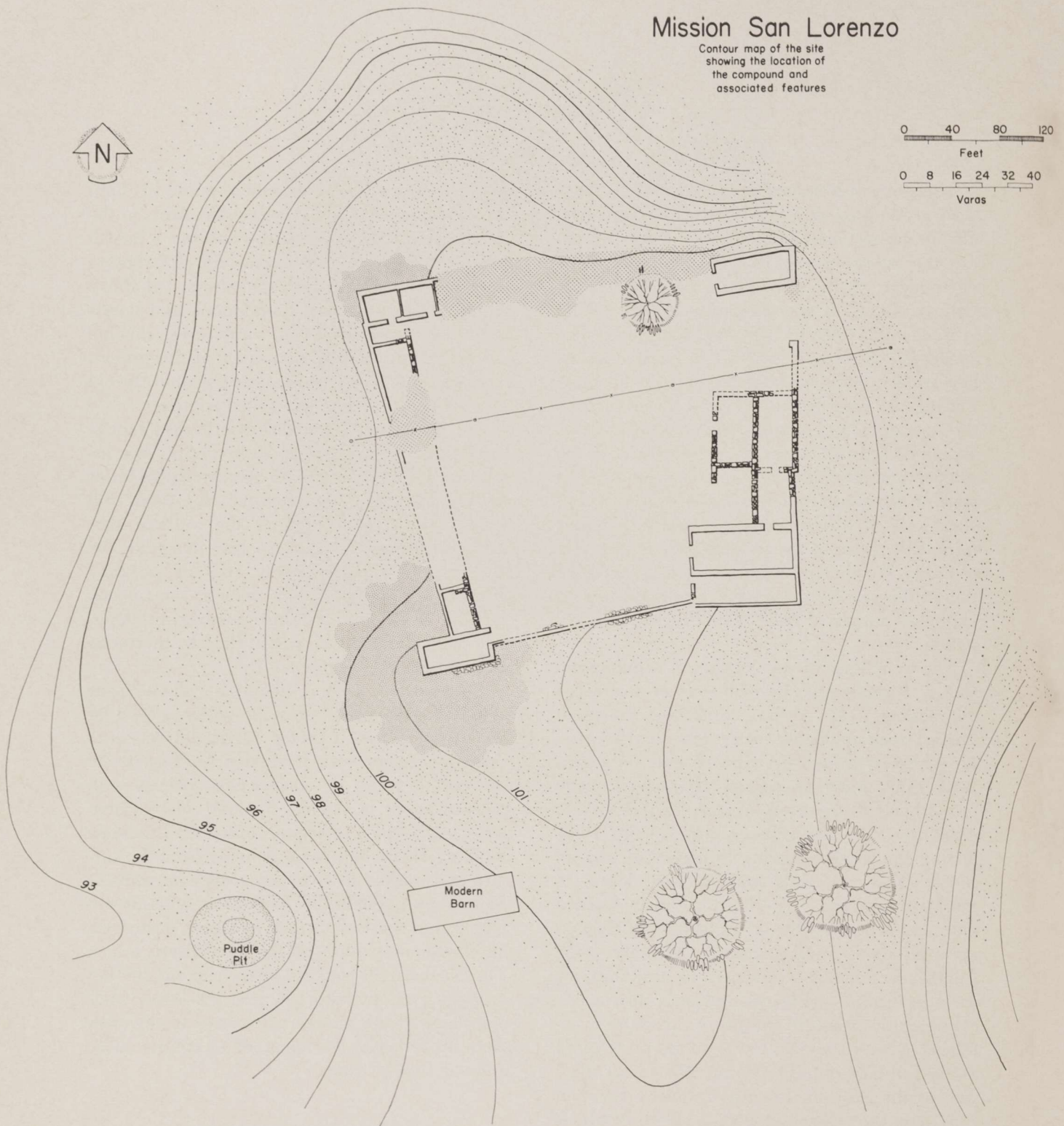


Fig. 1. Contour map of the mission site.

merous grid stakes proved to be an invaluable aid in mapping the structures, features, and walls of the mission quadrangle. A contour map of the site showing the topographic features in the immediate vicinity was drawn (Fig. 1). All elevations at the site were measured in relation to an "X" mark cut in the level surface of the threshold stone in the west entrance of Structure 2. This datum mark was assigned an arbitrary elevation of 100.0 feet.

Along the property line the low rubble mounds had been cross-sectioned by the machinery, and a little work on the first day of excavation revealed the presence of adobe wall bases and adobe floors in the profile. After making an exhaustive surface collection from the site, a small ditching machine was used to locate wall foundations in the bulldozed area. Shovels were then employed to follow the foundations and thereby outline structures.

When the complete outline of a structure had been revealed, small test pits about one foot square were dug along the inside of the walls to determine the depth to the floor. The structure fill was always less than one foot in depth in the bulldozed area of the site. This fill was removed down to the burned roof material and the contents were collected from a one-fourth-inch mesh screen and bagged. Samples of the roof materials were then collected and the fill of the floor was processed and bagged separately. When multiple floor levels were encountered, the fill between the floors was processed as a separate provenience unit.

In the non-bulldozed portion of the site a similar excavation procedure was employed. Vegetation was cleared and shovels were used to find and follow the tops of adobe walls. The fill from each structure (up to 3.0 feet in depth in this area) was removed in several units: (1) fill above the primary wall rubble (removed in arbitrary 0.5 foot levels); (2) fill between the primary wall collapse and the burned roof material; (3) burned roof debris; (4) fill on the floor—no double floors were encountered in this area.

Grid squares and arbitrary levels were used in test excavations in the mission middens and in areas outside the structure walls.

Measured drawings were made of each structure, all associated features, and of the entire quadrangle complex (Fig. 3). The exact brick patterns, both vertical and horizontal, of all walls were recorded. Daily field notes recorded work progress, general excavation observations, and detailed provenience information. Color and black-and-white photographs were taken daily. All artifacts (ceramic, metal, lithic, bone, shell, glass) and faunal and floral remains were collected, and samples of adobe, roof materials, hearth contents, building stones, plaster, and soil types were taken.

After several structures had been partially cleared, an attempt was made to locate all four corners of the mission compound. As a result, structures 7, 8, 10, and 11, which were found to occupy the four corners (Fig. 3), were excavated and as many structures along the four walls were cleared as time and money permitted.

Several tests were made in the mission middens to determine their content, thickness, and extent. Areas adjacent to several structures, both inside the quadrangle and outside the compound walls, were excavated down to the old mission occupation surface. Testing indicated that the central portion of the west wall, including at least three habitation structures, had been bulldozed down to bedrock.

Unexcavated Areas

Several portions of the mission compound need further investigation. These are: (1) the central part of the north wall—which probably includes several large structures; (2) a small area along the east wall just south of Structure 10—possibly the gate area and one small structure; (3) the central part of the south quadrangle wall which includes at least one structure; (4) the central plaza area; (5) the midden areas, containing large quantities of Spanish artifacts; and (6) a probable Lipan Apache village area or areas somewhere in the vicinity which was occupied by the various bands during their visits to the mission.



Fig. 2. Aerial view of the site, taken during excavation, looking toward west. The Nueces River is in the background, and spring-fed tributary is to the right.

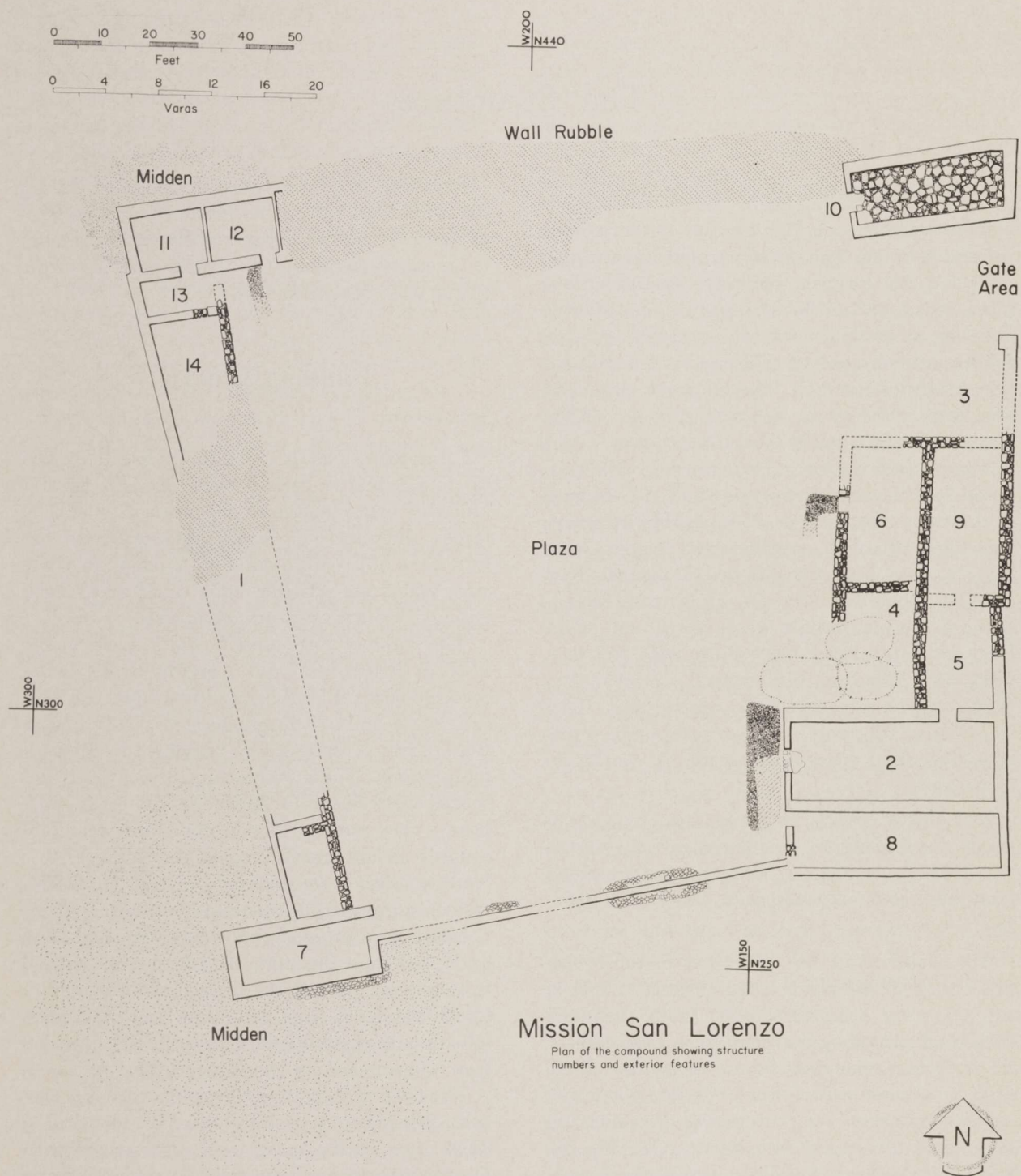


Fig. 3. Plan of the compound. Structures 1, 11, 12, and 14 are living quarters; Structure 2, church; Structure 3, unidentified; Structure 4, storage area; Structure 5, sacristy; Structures 6 and 9, convent; Structure 8, stable; Structure 10, granary; Structure 13, kitchen.

The Structures

Arrangement and Orientation

The structures of Mission San Lorenzo were constructed side by side in a rough quadrangle (Fig. 3). All exterior doorways opened onto a plaza which served for storage of nonperishable supplies, an outdoor work area, and as a stockade for domestic animals at night and when the mission was under attack. The enclosed plaza had one large gateway in the northern end of the east wall leading out toward the spring.

The outside wall of the quadrangle was composed for the most part of the abutted back wall of the various structures. The possible exception was the south wall, which seems to have been free-standing but strengthened along the base by piles of boulders (Fig. 3). The outside dimensions of the quadrangle were: north wall 187.5 feet, east wall 152.5 feet, south wall 163 feet, west wall 166 feet, N-S central axis 157 feet (about 57 *varas*), and E-W central axis 169.5 feet (about 62 *varas*). These figures are somewhat less than an estimate made by a military inspector:

There is in it a plaza of seventy *varas* square enclosed completely by walls howsoever weak: it has two bulwarks [*baluartes*] with two stone throwers [*pedreros*] and only one gate (Arricivita, 1792: 391).

The walls of all the structures in the southeast corner of the plaza (Structures 2, 4, 5, 6, 8, and 9) were oriented exactly with magnetic north and ran along our grid lines. The walls of all the other structures (those along the north, west, and south walls) were oriented about 15° west of magnetic north, giving a somewhat asymmetrical outline to the quadrangle (Fig. 3). The former group of buildings housed the church, sacristy, friary, and a stable. The remainder of the buildings—for housing soldiers, Indians, and supplies—probably represents a later building phase which was laid out on a slightly different orientation for some unknown reason.

Fourteen structures were investigated during the 1962 field season. At least six, and perhaps as many as twelve, additional structures remain to be excavated along the central portions of the north, west, and south walls.

Building Materials

Stone

Limestone slabs from 0.2 to 0.6 feet thick and up to 2.5 feet in length were used in various kinds of construction at the mission site. The larger slabs were probably obtained from the limestone hills within one-half to one mile of the site, while the smaller ones could have been gathered from nearby dry creek beds.

The walls of Structures 6 and 9, parts of the walls of Structures 4 and 5, and the walls facing onto the plaza of all the structures down the west side, were built of limestone slabs. Only one or two courses of these stones remained in the wall foundations. These were carefully leveled and spaced with slivers of limestone and set in dark brown clay mortar. The walls' slabs were laid roughly in an interlocking pattern (Fig. 5, B). Neither interior nor exterior wall plaster was detected on the existing stone foundations.

Large quantities of limestone slabs had been bulldozed from the stone wall bases and stacked in long piles prior to the time of the excavation. Local residents reported that the Barksdale schoolhouse was built largely with slabs carried from the mission site many years ago.

The floor of Structure 10 was paved with carefully fitted limestone slabs (Fig. 17), identical to those used in the walls, and also spaced with limestone slivers and set in a brown clay mortar.

An extra large limestone slab, about 3 feet by 5 feet served as an interior threshold in the west entrance of the church (Structure 2). The upper surface of this stone was worn quite smooth. Smaller limestone slabs were set around the

large stone, forming a flagstone pattern (Fig. 8).

Two interior features in Structure 7 (Fig. 14) were constructed of limestone slabs set in adobe plaster. The purpose of these features is unknown. Other structures may have had interior stone platforms prior to the bulldozing operation.

Limestone slivers (snecks) from 7 to 15 cm. in diameter and about 3 cm. thick were chipped from limestone boulders and used in leveling and spacing the stone wall slabs. Each of these stone flakes had a striking platform, bulb of percussion, and thin sharp edges. A stockpile of snecks was found in Structure 4.

Cobbles of various sizes were gathered from the gravel bars of the nearby Nueces River and used at the mission. The large majority of these cobbles were streamworn limestone, but a few were silicified wood, chert, and conglomerate.

Walks made from closely spaced cobbles (up to about 15 cm. in diameter) were found in the plaza at the following locations: outside Structures 12 and 13, along the west wall of Structure 6 and outside the main entrance of the church (Fig. 3). The cobblestone walks are described in detail in the section on structures.

Larger cobbles (up to one foot in diameter) were stacked at the base of the south wall on the inside and outside of the compound and around the outside base of the south wall of Structure 7 (Fig. 14). In these areas there was little or no slope for drainage, and the cobbles probably not only strengthened the lower walls, but kept the water from standing along the wall foundations after rains.

Adobe Bricks

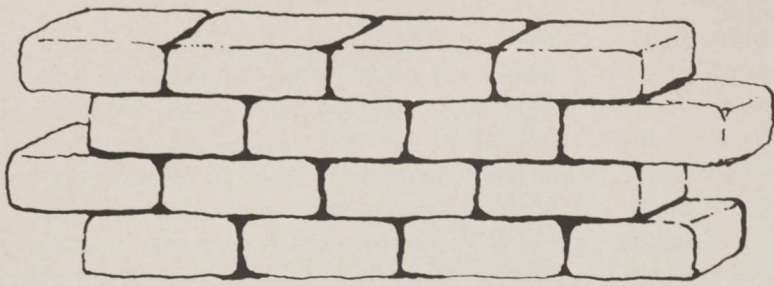
Many thousands of sun-dried building blocks made from local soil were used in the walls of the mission structures. All were mold-made as shown by their uniform size and by striations on the edges made by the mold as it was lifted off the still-moist bricks. The average size of the bricks was 45.6 cm. long, 26.3 cm. wide, and 11.3 cm. thick. The adobes used in the church (Structure 2) were made from a light tan caliche, while the adobes in other structures were made from brown, humus-stained soil identical to the topsoil at the site. A few of the light tan adobes occurred in Structure 10 and the south quadrangle wall, among the dark adobes (Fig. 6, B). These and the light colored adobes in the church seem to be somewhat more durable and

were probably made of carefully selected soil, whereas the dark adobes of the other buildings were made from the most readily available topsoil. All of the adobes contained large quantities of river gravel up to 3 cm. in diameter. In some areas the dark adobes contrasted with the topsoil only in their gravel content. No straw or manure could be detected in the adobe bricks at this mission, and it is likely that the readily available river gravels were mixed with the adobe mud to add strength, prevent cracking, and turn aside the rain in lieu of the fibrous materials which are used for the same purposes in modern adobes. An examination of adobe bricks at several other Spanish sites in West Texas reveals that they are consistently of large size and tempered with gravels, as opposed to adobe bricks in more recent structures which are smaller in size and tempered with straw or manure. Many of the adobe bricks at San Lorenzo, especially in the non-bulldozed area, were as hard and solid as modern adobes, although they had lain in the ground for 200 years.

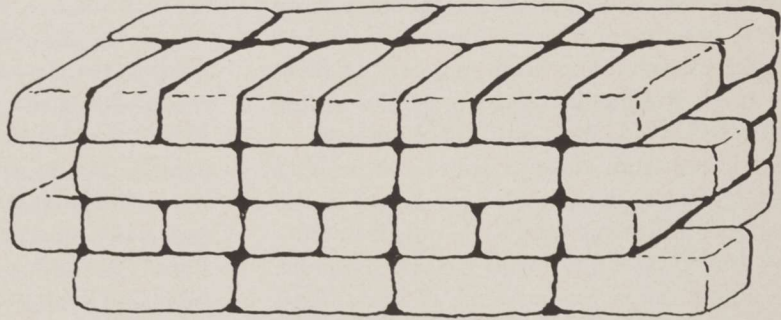
Situated about 100 feet southwest of Structure 7 is a circular depression about four feet deep, which ranges from about 15 feet in diameter at the bottom to about 40 feet in diameter at its maximum extent. Modern trash disposal made it impossible to test, but it is probable that it was a small, natural depression which was developed into a puddle pit for the manufacture of adobe bricks. No other similar depressions were found near the mission. Soil from the surrounding ridge could have been used, and water and gravel were readily available in the Nueces River about 200 feet to the west.

Adobe bricks were used primarily in wall construction, but one was found plastered onto the floor of Structure 10 near the door (Fig. 17), and some others served as an interior threshold in the west entrance of Structure 6.

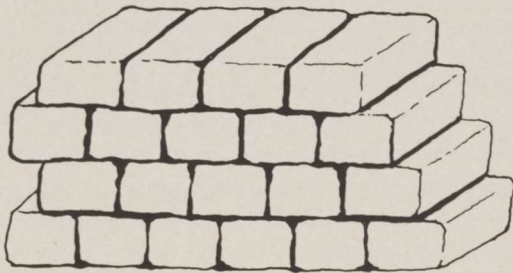
Four basic brick patterns producing three wall thicknesses were used in the various walls of the mission structure (Fig. 4). Pattern No. 1 (one brick width in thickness) was used for a few interior partition walls such as between Structures 11 and 12. Pattern Nos. 2 and 3 (one brick length in thickness) were used in the east and south walls of Structure 8, the west wall of Structure 2, and in part of the outside wall of the structures along the west side of the quadrangle. Pattern No. 4 (one brick length plus one brick



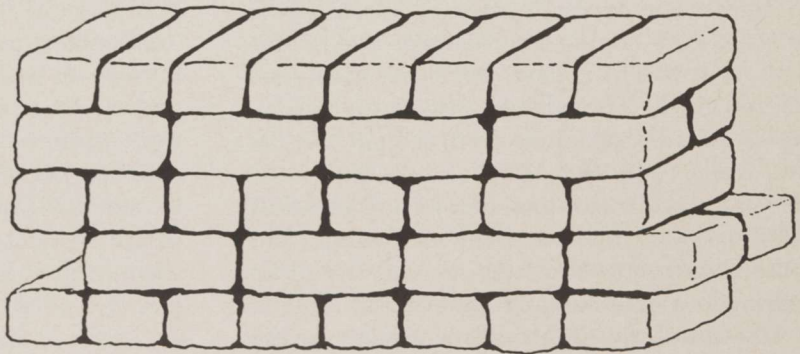
A



B



C



D

Fig. 4. Details of the four patterns used in adobe brick construction. A, Pattern 1; B, Pattern 4; C, Pattern 2; D, Pattern 3.

width in thickness) was the pattern used in most of the other walls of the mission compound—Structures 2, 7, 10, 11, 12, 13, 14, and the south wall.

Many of the excavated walls had broad cracks up to 12 cm. wide between the bricks (Fig. 8). These cracks were filled with brick fragments and adobe mortar, indicating that these materials were present as the walls were being built. These filled cracks may have resulted partly from the fact that the brick sizes were such that they did not overlap to form perfectly smooth wall faces (especially in Pattern Nos. 3 and 4) without leaving internal crevices. It is also probable that the builders left broad internal cracks (filled with mortar) between the bricks in the lower part of the walls and then gradually narrowed these cracks toward the top, making the walls broader at the bases and thereby somewhat more stable.

Puddled Adobe

This commonly used construction material had the same consistency as the bricks—soil with a high gravel content—and made a very durable surface when dry and hard. The puddled adobe was made with caliche and dark brown soil, as were the bricks, and the light colored puddled adobe was used only in the structures built of light colored bricks.

A massive layer of puddled adobe up to 9 cm. in thickness was used to cap the roof of all the structures.

Puddled adobe was used as a floor covering in all structures except Nos. 4, 8, and 10. A layer of mud containing the usual gravels covered the floors to a depth of about 3 cm. When these adobe floors began to get worn and develop low damp spots, a layer of fine brown clay (about 6 cm. thick) was laid over the old floor and a second adobe floor was poured (Fig. 6, C). These double floors were detected in Structures 2 and 5 and may have been present in other structures where the floor was not penetrated. A stockpile of dark brown clay was found in Structure 4 (Fig. 12).

Puddled adobe was used as mortar in setting the bricks in the walls and filling cracks between the bricks. It was also used to form a threshold between Structures 2 and 5 (Fig. 6, D) and as a plaster covering for interior features in Structures 7, 10, and 12.

Plaster

Prepared plaster was used on the interior and exterior surfaces of the adobe walls. The interior plaster of Structures 2 (church) and 10 (granary) was composed of lime and fine-grained river sand. This high quality plaster had been applied in a layer ranging from about 5 to 15 mm. thick, and the surface had been whitewashed. Numerous fragments of such plaster were collected from the floors of these two structures, and some of these lumps showed that the plaster had been applied in two layers with whitewash between. Fragments of this white plaster found at the base of the western end of the north wall of Structure 2 showed patches of red pigment adhering to the surface, and dripings of red pigment were found along the base of the wall in this area. Red religious murals probably adorned this wall of the church.

The plaster used in the other buildings at the site was composed of a fine-grained caliche soil with lime and small pebbles added. This plaster was applied to the walls in coating up to 7 cm. in thickness and was occasionally found preserved in fragments up to 2 feet in diameter (Structure 13). There was no evidence that this coarser plaster was either whitewashed or painted.

Lime for use in the plaster was probably made from locally abundant limestone. A large pile of pure white lime lay on the floor in the southwest corner of Structure 10 (Fig. 17). The present-day landowner of the northern part of the site described a large, circular "oven" in the bank of the spring creek 150–200 feet north of the north quadrangle wall. The oven was several feet in diameter and several feet deep, lined with adobe bricks, and showed signs of intensive burning. Destroyed a few years ago, the oven quite likely was the mission lime kiln.

A stockpile of water-washed sand and gravel, used as a tempering agent in adobe and in preparation of wall plaster, was found in Structure 4 (Fig. 12), and samples of it were collected for comparison with these other materials.

Wood

Although we know from the documents that wood was a common building material at the site, the only surviving evidence of its use is in the charred roof fragments lying on the structure floors and the large charred support post (oak,

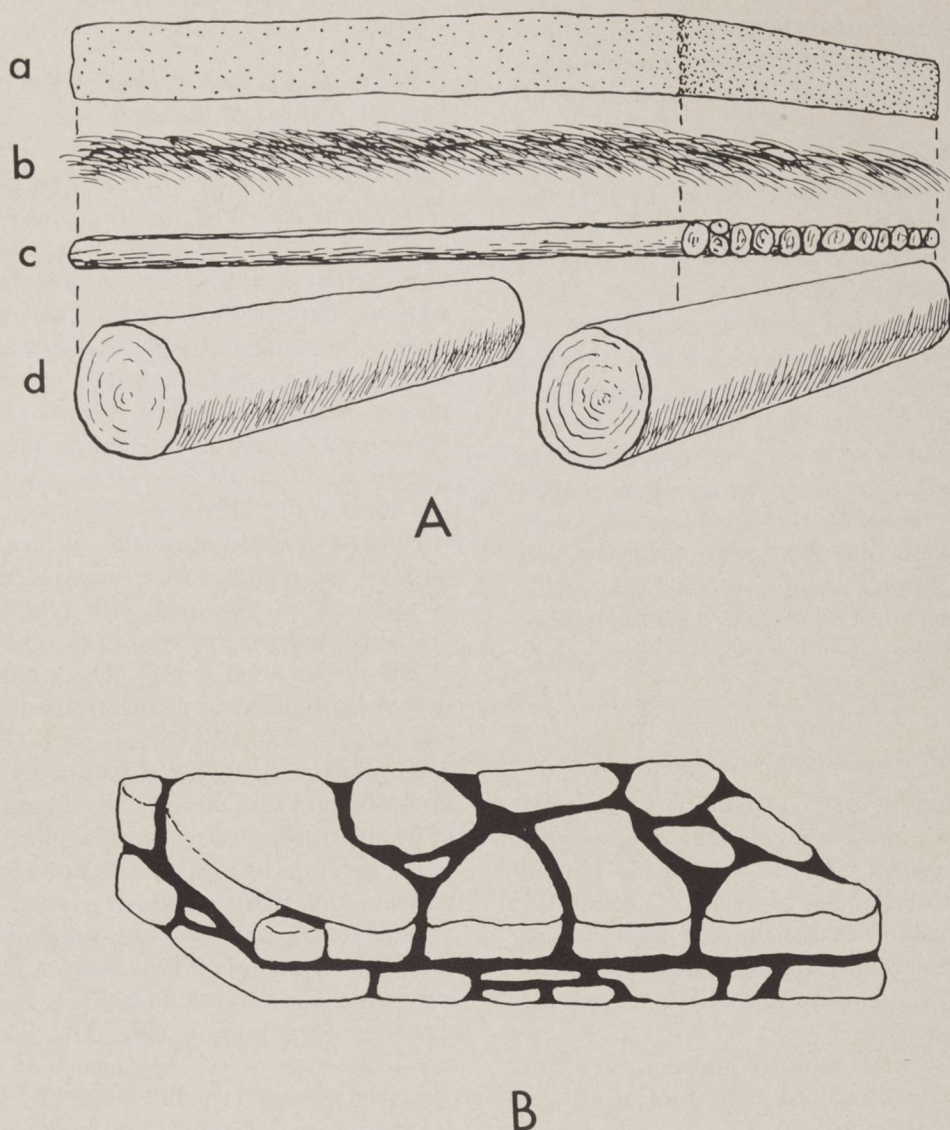


Fig. 5. A. Details of roof construction: a, puddled adobe; b, grass; c, savinas; d, vigas. B. Details of stone wall construction.

about 27 cm. in diameter) in the floor of Structure 14 (Fig. 23, C). Many large charred fragments of roof beams (*vigas*) were made from oak (probably live oak) but several of juniper were found and at least one was made from an unidentified wood.

The small cross pieces (*savinas*) used in the roofs were usually about 3 cm. in diameter, and complete stems, not split fragments, were used (Fig. 5, A). Juniper was the wood most commonly selected for these cross sticks, but a few stems of unidentified shrubs were found. The original length of these *savinas* is not known. Only short broken fragments were recovered.

Wood was probably commonly used for doors, windows, framing, furniture, ladders, tools, and other purposes, but only indirect evidence is furnished by the iron nails found in and around each structure.

Fig. 6. Excavations in the southeast corner of the quadrangle. A, cobblestone walk west of Structure 2; B, light and dark adobe bricks in south quadrangle wall (note reinforcement outside the base of the wall); C, superimposed adobe floors exposed inside a burial pit in floor of Structure; D, adobe threshold leading through north wall of Structure 2 into Structure 5.



Grass

Local grasses were gathered and used between the sticks and the puddled adobe in the roofs (Fig. 5, A). Charred mats of this grass were found preserved in some structures, and impressions of grass stems appear in the undersurface of the puddled adobe roof material. No identifications of the grasses have been obtained.

Clay

Clay-bearing soils were used for the following purposes in the mission buildings: (1) Light tan caliche and brown topsoil were used in the adobe bricks, adobe floors, and adobe roofs. (2) Dark brown clay was used as mortar in the limestone block walls and flagstone floors. (3) Dark brown clay was used between adobe floors in structures which had double floors. These clayey soils were probably acquired locally, but no obvious borrow sources were found in the vicinity. A stockpile of dark brown clay was found in Structure 4 (Fig. 12).

Sand and Gravel

Water-washed sand and gravel from the bed of the nearby Nueces River was used as a tempering agent in the adobe and in the preparation of wall plaster. A stockpile of this sand and gravel was found in Structure 4 (Fig. 12), and samples of it were collected. After each flood, the Nueces River leaves bars of clean, assorted sands and gravels of various diameters near the mission site.

Structure 1 (Fig. 3)

Excavation: The bulldozing operation had partially uncovered the floor of this structure, and some troweling exposed about 60 square feet of floor with a fragment of an adobe wall running along the west edge. The bulldozer had removed the southern portion of the room down to below floor level and the south part of the east wall was completely gone. The north end of this structure extended beyond the property line fence and was not excavated.

Location: This structure lay just inside the central portion of the west quadrangle wall, centered at about N335-W260 on the grid. The area im-

mediately to the north was not excavated and the area to the south of it had been bulldozed down to bedrock.

Dimensions: About 60 square feet (6 feet N-S, 10 feet E-W) of floor was cleared, but the original dimensions could not be determined.

Fill: From 3 to 12 cm. of ashy soil containing burned roof material and cultural debris lay on the floor. This fill, heavily disturbed by the bulldozer, was carefully removed with a trowel but was not screened.

Wall construction: Only a few adobe brick fragments remained in the west wall. The thickness and pattern of this wall and details of the other walls were not determined.

Plaster: No data.

Floors: A single adobe floor lay from 3 to 6 cm. above the limestone bedrock. Dark brown topsoil containing some flint chips and burned rocks lay between the floor and the bedrock. Ranging from 1 to 3 cm. thick, the floor was made of light tan puddled adobe containing some small river gravels. The surface of the floor was smooth and hard though ashy soil and cultural debris lay on it. Overlying the debris were fragments of charred beams and burned clay roof material in several places.

Roof construction: The roof of Structure 1 apparently was constructed in the same manner as Structure 7. Charred beams up to about 9 cm. in diameter, charred sticks, and burned clay with grass impressions were found above the floor along the fence where it was not removed by the bulldozer. This burned roof material reached a thickness of 27 cm. just inside the west wall.

Doors: No data.

Hearths: No data.

Miscellaneous features: No data.

Associated artifacts:

Copper: 1 perforated overlay.

Iron: 4 handmade nails; 1 unidentified object.

Ceramics: 1 dark gray plainware; 18 amber glaze plainware; 5 clear glaze brown painted ware; 6 majolica.

Stone: 1 Type 5 gunflint; 2 Type 3 flakes; 3 miscellaneous flakes.

Bone: 6 food bones.

The presence of animal bones and other trash indicates the structure probably was a dwelling, burned perhaps at the time of the mission's abandonment. The northern part of the structure is preserved beneath the property line fence.

Structure 2 (Figs. 3, 7)

Excavation: The bulldozing operation has removed the walls and fill of this structure down to within 3 to 9 cm. of the upper floor on the west end. The upper floor sloped up toward the east and about 18 feet of it had been scraped away, but the lowest course of adobe bricks remained in the walls forming the eastern end. Encountered on the first day of excavation, the structure's entire area eventually was cleared of debris (Fig. 8).

Location: Structure 2 lay just inside the east quadrangle wall near the southeast corner. The east wall formed part of the enclosure and the south wall was shared with Structure 8, which lay parallel to Structure 2 and in the southeast quadrangle corner. Structures 4 and 5 lay just to the north of 2, with a doorway between 2 and 5. Structure 2 was centered about N295-W120 on the grid.

Dimensions: The central dimensions were 16.4 feet N-S by 41.6 feet E-W inside, and 21.8 feet N-S by 45.9 feet E-W outside. The inside dimensions of the structure, in *varas*, were 6 N-S and 15 E-W.

Fill: From 3 to 9 cm. of light brown soil, crumbled adobe, and fine-grained white plaster fragments lay above the upper floor in the west part of Structure 2, and there were large concentrations of burned roof material on the floor in several places. The fill contained few artifacts. All fill, and portions of the floor, had been removed by the bulldozer in the eastern part of the structure.

Wall construction: All of the walls were made of adobe bricks. The north, east, and south walls were one brick-length plus one brick-width thick (Pattern No. 4, Fig. 4, B), and the west wall was one brick-length thick (Pattern No. 3, Fig. 4, D). The north, east, and south walls averaged about 2.75 feet or 1 *vara* in thickness. The north, east, and south walls had adobe-filled cracks up to 15 cm. wide running longitudinally. One of these cracks in the northwest corner had been partially

filled with brick fragments which indicated it was present during the construction of the wall rather than having developed later. There was no evidence of special footings beneath the walls. Only a single course of bricks remained in the wall around the east end of the structure, but two or three courses remained around the west end.

Plaster: Traces of white sandy plaster were found along the base of the north wall where it extended about 3 cm. above the upper floor near the west end of the structure. There were drops and streaks of bright red pigment on the surface of the plaster in several places, indicating that there had been red paintings on the wall. Slabs of wall plaster up to 18 cm. in diameter were found on the upper floor in the west end of the structure. It averaged about 2 cm. thick and was composed of fine-grained river sand cemented with lime and coated on the outer surface with whitewash. Patches of red pigment, which once formed designs, were found on several of the larger fragments of fallen plaster. Some of the plaster showed evidence of having been applied in two layers with whitewash between them.

Floors: Structure 2 had two superimposed adobe floors (Fig. 6, C). The western end of the upper floor (No. 1) was cleared of debris except for a few patches of burned roof material. The surface elevation of this floor ranged from 99.49 to 99.73 ft. Toward the eastern end of the structure, the upper floor sloped upward sharply onto what apparently had been a raised area (sanctuary) resting on a hard-packed gravelly soil base. Unfortunately, the bulldozer had removed about 18 feet of the eastern end of the upper floor and the entire sanctuary area. Composed of light tan adobe with small river gravels, the floor averaged about 3 cm. in thickness, and its upper surface was smooth and hard-packed. At least twelve burial outlines (several of which intersected) could be seen in the surface of the upper floor; most of these were later excavated. A lower floor (No. 2) was detected in the edges of the grave pits, and was separated from the upper floor by about 3 to 9 cm. of dark brown, very compact clay which apparently was placed over the lower floor as a base for the upper floor. The lower floor was not cleared; it was studied only in the grave walls. It, too, was composed of light tan adobe with river gravels. Its average thickness was about 3 cm., and its upper surface elevation



Fig. 7. Excavation of southeast corner of quadrangle showing Structure 2 in center with Structure 8 to the right and Structure 5 to the left. Note burial pits through door of Structure 2 and portion of cobblesone walk in front. Looking east.

ranged from 98.99 to 99.37 feet sloping upward toward the east wall. In several instances, burials had been dug while the lower floor was in use (as indicated by the grave profiles) and later burials which originated from the upper floor had encountered and disturbed these older graves. Very few artifacts were found in association with the upper floor.

Roof construction: Several large patches of burned roof materials (up to 4 feet across and 0.3 foot thick) lay on the upper floor in the west end of Structure 2. This material (beams, sticks, and grass-impressed clay) indicates that the roof was constructed in the same manner as that of Structure 7. The majority of the larger beams lay north to south, indicating that they had spanned the structure along the short axis. Burial Pits 2 and 3 contained large quantities of burned roof material in large chunks lying just as it had fallen, indicating that the pits must have been open at the time the roof burned and collapsed.

Doors: Two doorways led into Structure 2 (Fig. 8). One, centered in the west wall, led out onto a cobblestone walk in the plaza. The other door led through the north wall into Structure 5, about 7 feet from the east wall. The north door was 3.5 feet E-W and 4.7 feet N-S. This threshold, made of light tan adobe with small gravels, was smooth, hard-packed, and had a slightly concave surface. The surface elevation ranged from 99.55 to 99.74 feet.

The west doorway was about 5 feet wide with a threshold formed by a large flat stone, irregular in outline and with a very smooth surface. The stone, about 2.5 feet by 5 feet, was surrounded by small flat stones about 0.8 foot in diameter, set at the same elevation. During excavation a cross-mark was cut into the surface of the large stone to serve as a datum point.

Hearths: There is no evidence (ash, burned adobe, etc.) of a hearth in this structure.

Miscellaneous features: Burials (Figs. 9, 10). Burial pit outlines were clearly visible in the floor of the church (Structure 2). Ten burial pits were excavated and several others were left intact due to a lack of time. The pits excavated produced the remains of at least 17 individuals including 9 adults, 3 adolescents, and 4 infants (Appendix A). Most of the skeletons were incomplete because of intersecting pits. The articulated skeletons were extended on the back with the heads

toward the west (away from the altar) and hands folded across the lower chest (Fig. 9). Many of the burials contained glass beads and brass religious ornaments.

The burial pits were for the most part arranged in rows in the west half of Structure 2. The pits were filled to floor level and well-packed so that the floor surface remained smooth and flat. The burned roof debris lay above the burial outlines in the south half of the church floor. Burial pits in the north half of the church floor had been opened and the skeletons partially removed prior to the collapse of the burned roof, and the undisturbed burned debris partially filled these pits (Fig. 9).

In many examples, burials from the upper floor level had intersected and disturbed burials which had been placed through the lower floor, and in at least one instance a burial pit on the upper floor clearly intersected and disturbed another upper floor burial. In the restricted nave of this small church, burial plots were apparently at such a premium that disturbance of previous burials was common. A good example of this is found in Burial 8 (Fig. 9), in which a complete adult skeleton associated with a brass crucifix was stacked along one wall of the pit when another adult, also associated with a crucifix, was placed in the bottom of the pit. No bones of the first skeleton remained articulated after it was moved aside, although it could not have been in the ground more than nine years and had been protected beneath the floor of the structure.

Most of the burials were about 2.5 feet below the floor, and the bottom 1.0 to 1.5 feet of the pits extended down into the rotten limestone bedrock (Fig. 10). The fill in the burial pits was composed of limestone fragments, caliche nodules, and a small amount of dirt. Most of the adult burials had a small open cavity above the chest and abdomen (Fig. 10), and when this cavity was encountered, the bones could be seen lying articulated within it. This cavity resulted from the decay and collapse of the torso and there was no evidence of the use of a coffin in any burial.

The bodies were buried in homespun clothing, small fragments of which were preserved through contact with the brass religious medals. Dr. F. E. Petzel of The University of Texas at Austin identified this cloth as plainweave fabric of flax (Burial 8-1) and plainweave fabric of coarse cotton (Burial 4). The bodies were ap-

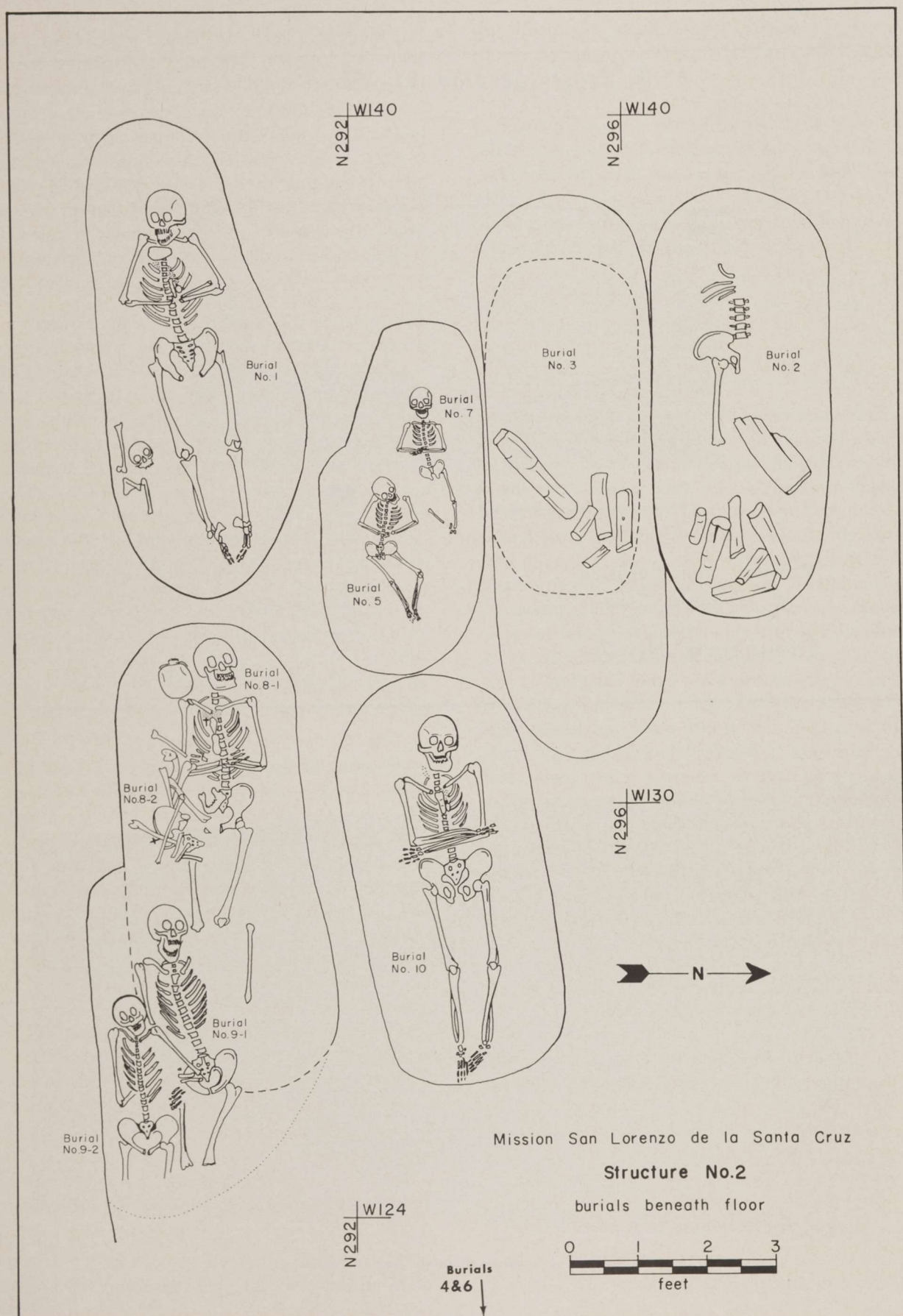


Fig. 9. Structure 2 showing burials beneath floor.

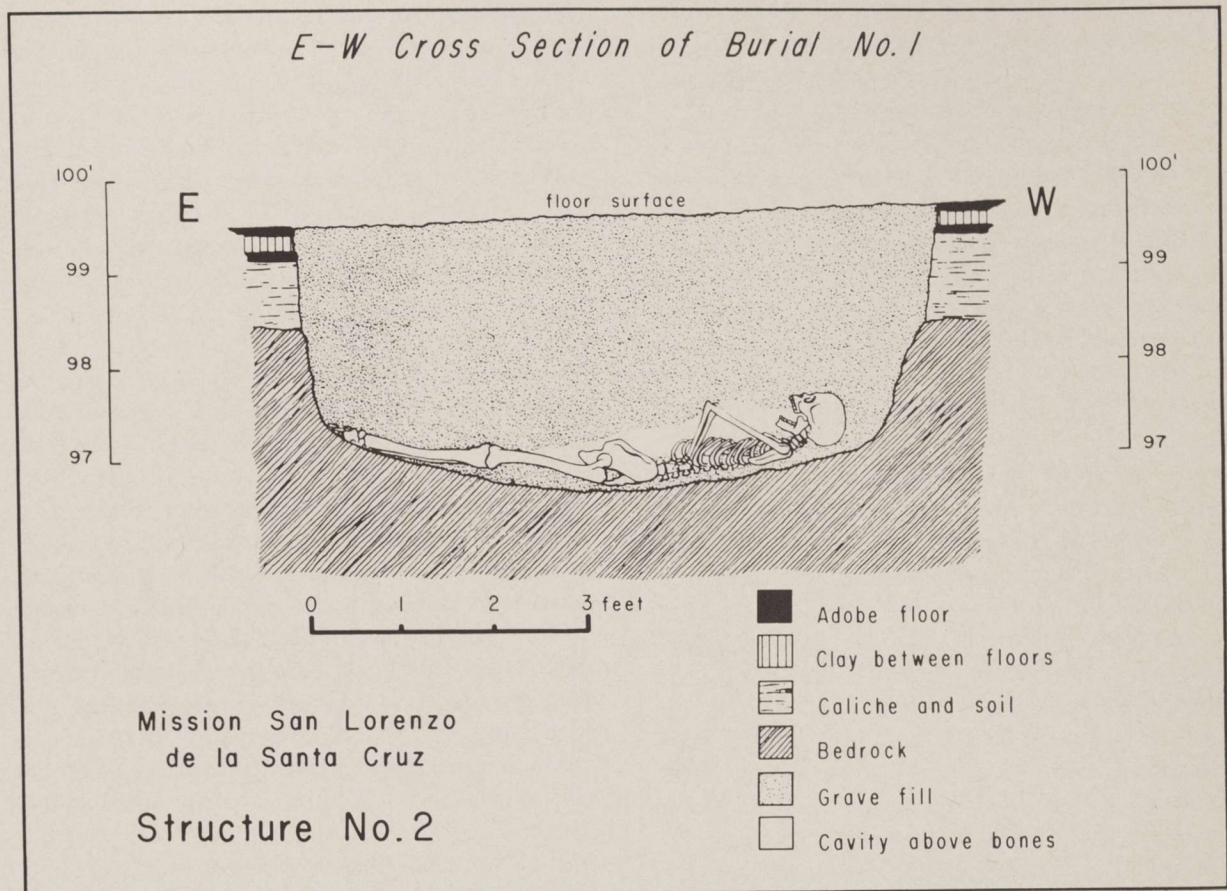


Fig. 10. East-west cross section of Burial 1 (top) and detail of burial.

parently wrapped in sheets before interment and small fragments of this cloth were preserved on some skulls and longbones. Dr. Petzel identified this finely woven fabric as "probably linen." There were no buttons or other clothing fasteners in the graves and no evidence of wood or nails—only glass beads and religious ornaments. The beads, probably presented to the individuals at the time of their conversion, were strung in small numbers, along with the religious medals, around the necks of the individuals.

Burial 1 (Fig. 10) contained one complete, adult female articulated skeleton with fragments of a child's disarticulated skeleton in one corner of the burial pit. The only bones not present with the adult were the end joints of three fingers which apparently were missing at the time of interment. The skeleton was extended on the back with the head toward the west, the hands and forearms folded across the lower chest, right above left. A large brass medallion (No. 1, Fig. 29, B) was strung around the neck (crucifixion scene upward), along with 28 small burgundy red glass beads and one amber bead. In the intestinal area was a concentration of several hundred small seeds. Dr. Hugh Cutler of the Missouri Botanical Garden identified these as "*Opuntia* seeds, from fruits of a pad cactus like *O. engelmanni*."

Burial 2 (Fig. 9) contained an articulated fragment of an adult postcranial skeleton—right femur, pelvis, lumbar vertebrae, some ribs; oriented head to west in a supine position. This probably was a Spanish burial which was partially disinterred prior to abandonment of the site.

Burial 3 (Fig. 9) contained a few scattered teeth and bone fragments of an adult and apparently was another Spanish burial moved in part to sacred ground elsewhere.

Burial 4 was the upper half of an infant articulated skeleton which was disturbed by Burial 6. The infant was lying extended on the back, head toward the west. A small brass crucifix (No. 2, Fig. 29, E) was strung around the neck (crucifixion scene upward) with 17 small, clear glass beads, 2 alabaster beads, and 1 coral bead.

Burial 5 (Fig. 9) was a child's articulated skeleton, extended on the back, head toward the west; the forearms were folded over the abdo-

men, right above left. This burial pit, which had no associated artifacts, intersected and disturbed the right leg of Burial 7.

Burial 6 was an articulated fragment of an adult skeleton—left scapula, humerus, radius, ulna, carpals and phalanges, and a few ribs; oriented on back, head to west. This probably was a Spanish burial which was partially moved. The pit disturbed the lower half of Burial 4.

Burial 7 (Fig. 9) was a child's articulated skeleton in a supine position, extended, head to the west. The forearms were folded across the lower chest, right over left. The right leg was removed by Burial 5. There were no associated artifacts.

Burial 8-1 (Fig. 9) was an adult male articulated skeleton lying extended on the back, head toward the west, with forearms folded across the lower chest (right above left). It had been placed in the pit previously occupied by Burial 8-2, which was conveniently stacked to one side. Crucifix No. 3 (Fig. 29, C), with the crucifixion scene upward, was strung around the neck with 29 medium compound red glass beads, 6 small compound red glass beads, 4 medium simple blue-green glass beads, 7 small simple blue glass beads, and 1 coral bead. Some small fragments of finely woven linen adhered to the skull, mandible, and right radius and ulna. Burial 9-1 disturbed the lower legs and feet of Burial 8-1, and some infant bones were scattered in the eastern part of the pit.

Burial 8-2 (Fig. 9) was a complete disarticulated skeleton of a young adult female. The bones were stacked to one side in their approximate relative position (skull to the west) when Burial 8-1 was placed in the same pit. A handmade brass crucifix (No. 1, Fig. 29, D) was found in the pelvic area, and small fragments of finely woven linen were adhering to some of the longbones.

Burial 9-1 (Fig. 9) was the articulated skeleton of an adult male lying fully extended in a supine position with the head toward the west. The entire left arm, including the scapula, was removed by an adjacent burial pit (not explored). The right arm was extended along the right side. Some infant bones were scattered in the grave fill. There were no associated artifacts. Burial 9-2 was lying partially above this skeleton and was possibly buried in the same pit at

the same time. These were the shallowest of all the burials and the pits did not penetrate the bedrock.

Burial 9-2 (Fig. 9) was an articulated skeleton of an adult female, extended on the back, head toward the west. The forearms were crossed on the lower chest. The lower legs were not removed due to a lack of time. Some infant bones, including a complete skull, were scattered in the fill above this individual. Burial 9-2 overlapped Burial 9-1 and may have been buried at the same time.

Burial 10 (Fig. 9) was the complete articulated skeleton of an adult female, buried fully extended on the back, head toward the west. The forearms were crossed over the abdomen, right above left. A complete but disarticulated skeleton of an infant was stacked beside the skull (to the south). A small brass medallion (No. 2, Fig. 29, A) strung with 2 small simple blue glass beads and 5 alabaster beads was around the neck of the adult. The downward face of the medallion depicts "Our Lady of Zaragossa" and the up-turned face depicts the "Sacred Heart."

Cobblestone walkway

Extending along the west wall of the church (Structure 2), and forming a walkway in front of the main portal, was a rectangular paved area about 27 feet long and 7 feet wide (Fig. 8). The smooth river cobbles used in this pavement ranged from about 8 to 15 cm. in diameter and were carefully placed to form a smooth, all-weather surface. The surface of this pavement was relatively flat and sloped downward slightly, away from the base of the wall.

Associated Artifacts

There were very few artifacts associated with Structure 2, except for those found in the burials. Three brass vessels (Fig. 27) found during the bulldozing are said to have come from the vicinity of Structure 2, but their provenience is uncertain.

Copper: 5 religious objects

Iron: 1 handmade nail

Glass: 1 pale green bottle glass

Beads: 93 glass; 1 amber; 7 alabaster; 2 coral

Structure 2 was probably the main church of San Lorenzo de la Santa Cruz because (1) It

was the only structure investigated which contained burials under the floor, and burials were frequently placed beneath the nave floor in Spanish missions of this period. (2) The burials all followed Christian tradition. (3) This was the largest structure, and it was built of the best quality adobe. (4) There was very little cultural debris lying on or above the floor. (5) There was evidence that the white plaster walls were decorated with red murals. The sanctuary and high altar probably were in the east end—where the floor sloped up and a side entrance led into the sacristy and friary—but all traces of these features were destroyed by the bulldozer. This structure apparently was burned when it was abandoned. Several burials still remain beneath the nave floor in the areas covered by the burned roof material. The bulldozer operator and other observers said the walls were still standing 2 to 4 feet high before they were bulldozed. The remaining wall bases have been capped with new adobe bricks to help preserve them.

Structure 3 (Fig. 3)

Excavation: The bulldozer removed the walls and fill of this structure down to within about 15 cm. of the floor. The remaining fill was troweled from a section of the floor about 5 feet N-S by 8 feet E-W. The remainder of the structure, including the north end which extends under the property line fence, was not excavated.

Location: Structure 3 was situated against the east quadrangle wall just north of Structure 9 and about 25 feet south of Structure 10 at grid location N370-W110.

Dimensions: About 40 square feet of floor were cleared and the south wall was mapped, but dimensions of the structure were not determined.

Fill: The fill, composed of fine brown soil mixed with crumbled adobe and building stones, was removed by careful troweling and passed through fine-meshed screens. No burned roof material was encountered in the area.

Wall construction: The south wall was constructed of flat, undressed stone slabs ranging from about 9 to 46 cm. in diameter and from 3 to 15 cm. in thickness. The limestone slabs had been laid in horizontal courses, leveled with small stones, and set in place with a dark clay mortar.

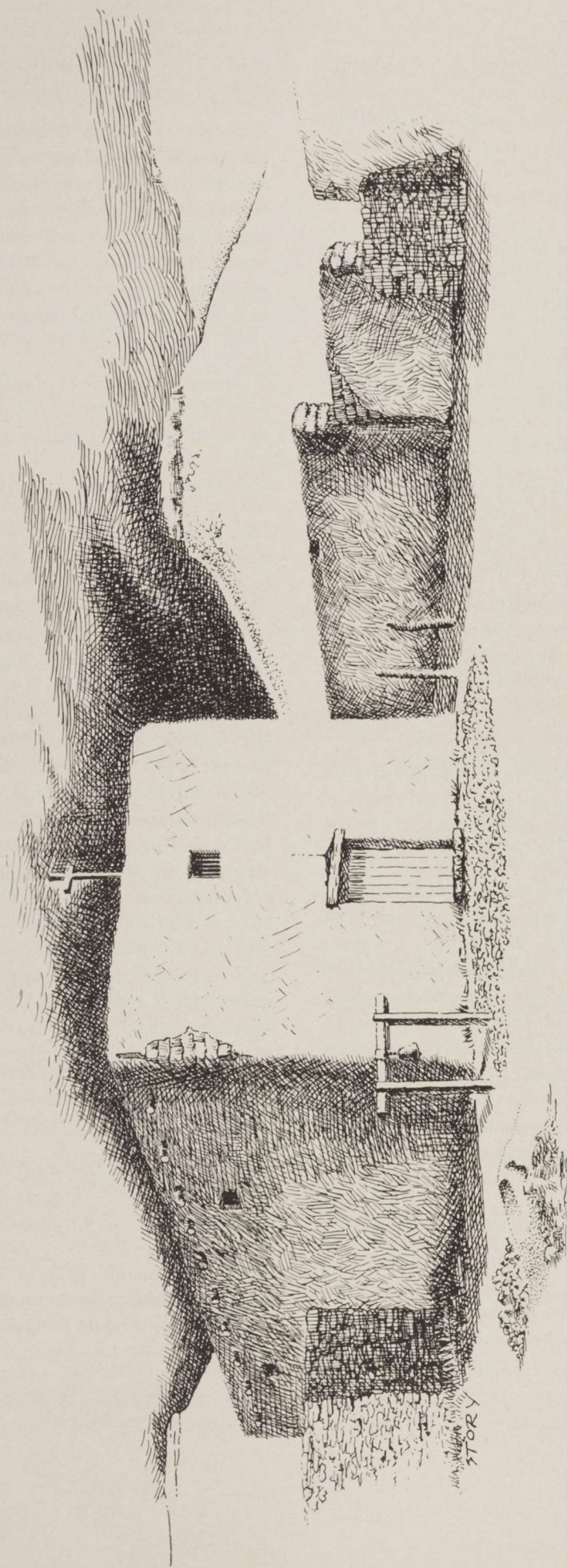


Fig. 11. Artist's reconstruction of Structure 2 in southeast corner of quadrangle. Looking southeast.

The other three walls of Structure 3 probably were made of adobe bricks because no stones remained in place to the north, east, or west of the floor area cleared. No details about these other walls were determined.

Plaster: No data.

Floors: A single floor of puddled adobe was partially cleared. Made of light brown adobe, it attained a maximum thickness of about 1 cm. and in some places it was worn through to the dark brown soil beneath. The surface of the floor was fairly smooth, compact, and easy to follow with a trowel.

Roof construction: No data.

Doors: A doorway probably led through the east end of the south wall of this structure into Structure 9. The doorway area was not cleared and no details about its construction are known.

Hearths: The floor showed scattered traces of gray ash, but no hearth was encountered.

Miscellaneous features: None excavated.

Associated artifacts:

Iron: 2 handmade nails

Ceramics: 8 amber glaze plainware; 3 majolica

Glass: 1 pale green bottle glass

Stone: 1 scraper blade; 1 Type 3 flake

Structure 3 was only partially excavated, and its function in the mission complex is uncertain. It did contain a few sherds and stone artifacts, but far fewer than the obvious habitation structures, 11, 12, and 14. Perhaps this structure served as the living quarters of a priest or other Spanish official and was kept relatively clean. Most of Structure 3 remains to be cleared, and the part beneath the property fence should have at least one foot of fill over the floor and wall bases. In the area excavated, there was no evidence that this structure was burned.

Structure 4 (Fig. 12)

Excavation: This area was heavily bulldozed, but about 1 to 1.5 feet of fill remained above the old ground surface. A small test pit, 2 feet N-S by 4 feet E-W in the center of the area disclosed several layers of material lying on the old sterile surface. The south portion, about 20 feet E-W by 12 feet N-S, was cleared to the old surface,

and all of the lenses of construction material were recorded and samples of each were taken.

Location: The area labeled Structure 4 in the field probably was not an actual building, but a partially enclosed area used for storage of building materials. This area was formed by the north wall of Structure 2, the west wall of Structure 5, the south wall of Structure 6, and a short stub of wall extending south from the west wall of Structure 6. This partial enclosure faced the plaza (Fig. 3) at about N315-W125 on the grid.

Dimensions: The area involved was about 24 feet long N-S and extended for about 20 feet along the north wall of Structure 2.

Fill: A layer of brown sandy soil, crushed adobe, plaster fragments, and building stones about 3 to 18 cm. thick covered this area. Between this fill and the old sterile surface were three overlapping lenses (Fig. 12) of building materials: (1) This lens of small river gravels was up to about 0.8 foot thick and 18 feet across; the gravels were all less than about 0.1 foot in diameter, very smooth, and they were not badly contaminated with sand or dirt. The gravel in this lens was the same type and the same size range as the gravels used in the adobe bricks and adobe floors. (2) A lens about 0.3 foot thick and 12 feet across held limestone slivers. These spalls were identical to the leveling snecks or wedges used in constructing the stone walls, and this lens apparently represented a stockpile of them. (3) A third lens, composed of a very fine-grained dark brown clay, was about 0.3 foot thick and 14 feet across. This clay was the same type used as mortar in the stone walls and used, in some instances, as a base for adobe floors.

Wall construction: The three walls enclosing this area are described in the sections on Structures 2, 5, and 6.

Plaster: Fragments of a rather coarse sandy plaster from about 1 to 3 cm. in thickness were found scattered over the bulldozed surface of this area.

Floors: There were no prepared floors in this area, but the old ground surface beneath the lenses of building material was very hard-packed and smooth; it could be trowled easily and swept clean.

Roof construction: There was no evidence that this area was roofed.

Doors: The west side of this area opened out onto the plaza. There were no doorways leading into Structures 2, 5, or 6.

Hearths: There were scattered patches of gray ash on the old ground surface beneath the lenses of construction materials. These seemed to be secondary depositions, however, as there was no evidence of burning on the surface.

Miscellaneous features: Lying on the old ground surface at about N312-W125 were three crushed amber beads and one composite button (brass/wood/glass). A small pit (15 cm. deep and about 37 cm. across) had been dug into the old ground surface about 1 foot from the wall of Structure 2 and 18 feet east of the northwest corner. This pit contained no artifacts and its purpose is unknown.

Associated artifacts:

Ceramics: 2 majolica

Glass: 3 amber beads

Stone: 1 cutting tool; 1 Type 3 flake

Bone: 5 food bones

This partial enclosure, which opened onto the plaza, was used as a storage area for construction materials. It was heavily bulldozed, but about 1.0 to 1.5 feet of fill remained over the old ground surface. The area was only about one-half excavated.

Structure 5 (Fig. 12)

Excavation: The walls of this structure were largely removed by the bulldozer, but a few inches of fill remained over the floors. A deep test trench, about 6 feet E-W and 2.5 feet N-S was excavated in the south end of the room down to sterile subsoil. Two superimposed floors were visible in the walls of this trench and several square feet of each floor were cleared and examined. The fill on the floors was screened.

Location: This structure lay against the east wall of the quadrangle between Structure 2 (to the south) and Structure 9 (to the north), at about N315-W110 on the grid.

Dimensions: The interior dimensions of this structure were 21 feet N-S and 14 feet E-W, or about 5 by 7.5 *varas*.

Fill: Up to about 6 cm. of fill, composed of adobe brick debris, plaster, and brown sandy soil, re-

mained above the floors of this structure. There were no artifacts or burned roof materials on the floors. The upper floor was separated from the lower by about 9 cm. of dark brown sterile clay which had apparently been placed on the lower floor to serve as a base for the upper one.

Wall construction: The remaining base of the east wall was composed of adobe blocks on the south end and of unshaped limestone blocks on the north end. The adobe portion of this wall seemed to be an extension of the east wall of Structure 2—the adobe was of the same type and the brick pattern was similar. Perhaps adobe bricks left over from the construction of Structure 2 were used to build a part of this wall. The south wall was shared with Structure 2. The west wall, which was abutted against the north wall of Structure 2, was composed of limestone blocks from 0.5 foot to 2.35 feet in diameter and averaging about 0.3 foot in thickness. These building stones were set in place with dark brown clay mortar and leveled with limestone chips. The north wall probably had a doorway which weakened it, making it collapse more completely, and contributed to its being largely removed by the bulldozer.

Plaster: A few small fragments of sandy white plaster about 1 cm. in thickness were scattered across the upper floor. No plaster remained on the lower edges of the walls which were cleared.

Floors: There were two prepared adobe floors, and about 50 square feet of each were exposed along the south wall. The upper floor (No. 1) was composed of light tan adobe with small gravels, had a smooth upper surface, and was about 3 cm. thick. The northern portion was partially removed by the bulldozer. About 6 to 10 cm. of dark brown sterile clay separated floor No. 1 from the lower floor (No. 2). The lower floor showed the same composition and thickness as the upper floor, and it lay on the unprepared old ground surface.

Roof construction: No traces of roof material were found on the upper floor of this structure.

Doors: One doorway in the south end of this room linked it to Structure 2. This doorway and its adobe threshold are described under Structure 2 (Fig. 6, D). A second doorway apparently led through the center of the north wall into Structure 9, but a deep cut by the bulldozer re-

Mission San Lorenzo

Structures 3-6,9

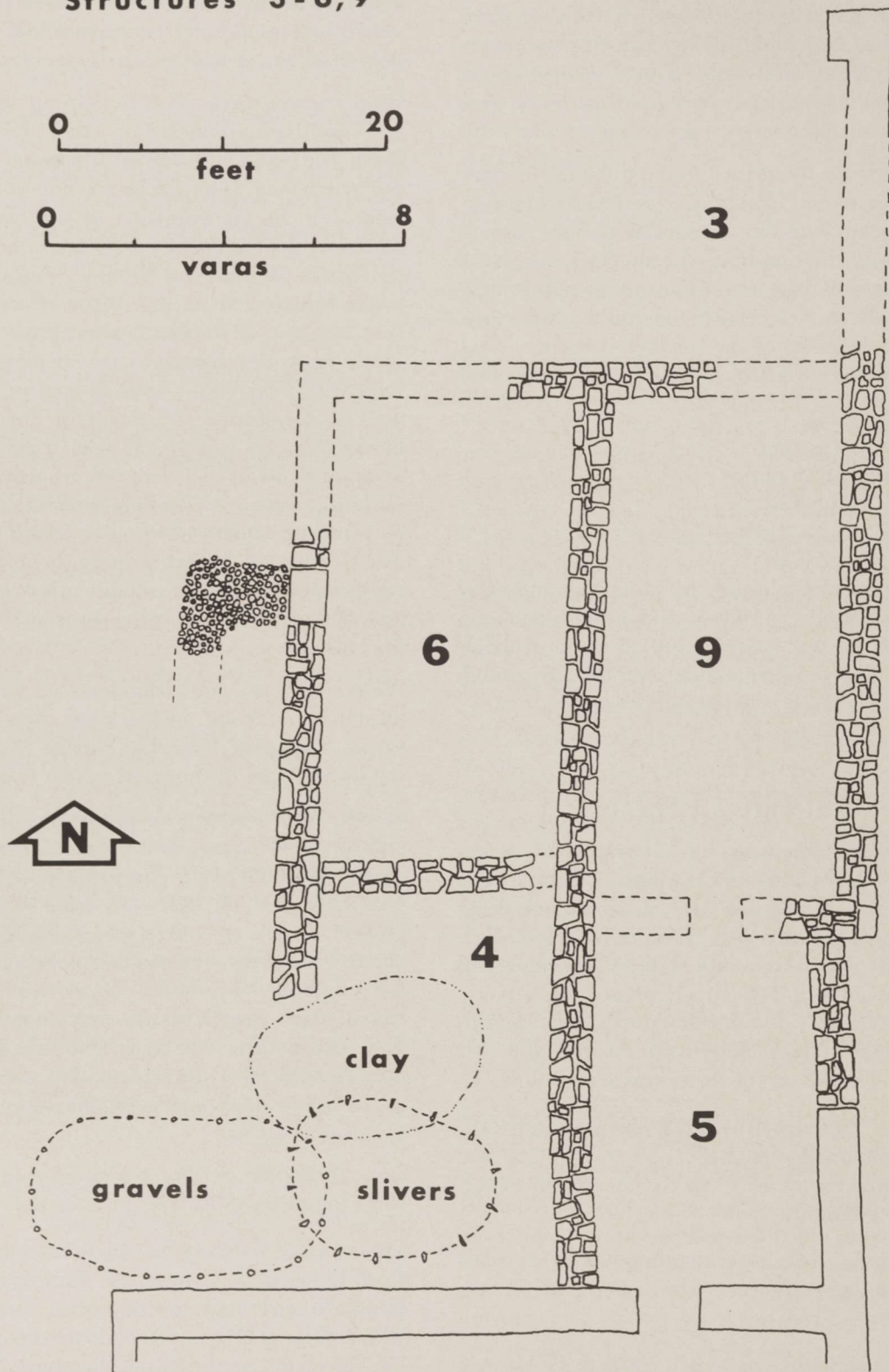
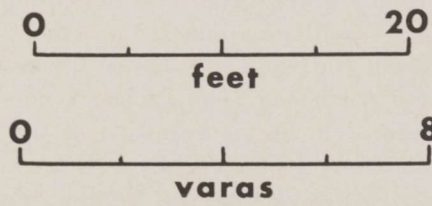


Fig. 12. Structures 3, 4, 5, 6, and 9.

moved the lowest course of stones from the west end of this wall and disturbed the doorway and it was not completely excavated.

Hearths: No traces of hearths were found in the excavated portion of the room.

Miscellaneous features: No data.

Associated artifacts: The floors and fill above the floors were clean and no artifacts were found.

Structure 5 probably served as the sacristy for Mission San Lorenzo. It was linked by a doorway to the sanctuary of the church (Structure 2) toward the south and by a second doorway to the friary (Structure 9) toward the north. The priests would have used this as a dressing room, and as a storage place for the robes, altar furnishings, sacred vessels, and other religious objects. The lack of artifacts on the floor indicates this room was kept clean and there was no evidence that Structure 5 was burned. The northern half remains to be excavated.

Structure 6 (Fig. 12)

Excavation: This structure was in the heavily bulldozed area. The wall foundations were cleared and recorded and a cobblestone walk outside the west wall was exposed, but the interior of the room was not excavated.

Location: West of Structure 9, north of Structure 4, this room faced out onto the plaza. It was centered at about N345-W125 on the grid.

Dimensions: The central dimensions of this structure were 28 feet N-S by 14.5 feet E-W inside and 32.3 feet N-S by 19.5 feet E-W outside. The interior dimensions were about 10.2 *varas* N-S by 5.3 *varas* E-W. The long axis was oriented almost exactly with magnetic north.

Fill: Most of the fill of Structure 6 was removed by the bulldozer. Apparently a few inches of brown sandy soil remained above the floor but this was not excavated because of limited time.

Wall construction: The walls of this structure were all made of unshaped limestone slabs from about 0.5 foot to 2.5 feet in diameter and 0.2 to 0.5 foot thick. Only the lowest one or two courses remained in the walls after the bulldozing, and the northwest corner of the room was completely cut away. The stones in the walls were set in place with a dark brown clay mortar and were

spaced with limestone spalls. The walls averaged about 2.7 feet, or one *vara*, in thickness.

Plaster: No data.

Floors: No data.

Roof construction: No data.

Doors: The only doorway detected in this room opened through the center of the west wall out onto the plaza. It was about 3 feet wide and the lowest course of stones in the wall formed the threshold. There was a cobblestone walk leading away from the outside of this doorway and an adobe brick platform extending from the doorway into the room for an undetermined distance.

Hearths: No data.

Miscellaneous features: A walk made of a single layer of smooth river cobbles led away from the west doorway of Structure 6. The cobbles ranged from about 6 to 15 cm. in diameter and were set in the ground in such a way as to produce a rather smooth, level, all-weather surface. This walk, which was from 3 to 5 feet wide, ran westward for about 10 feet, then turned south toward the church (Structure 2). Before the bulldozing, the walk may have extended north toward the granary (Structure 10).

Associated artifacts: While clearing the cobblestone walk outside Structure 6, the following material was collected:

Cobblestones: 10

Flint flakes: 11

Dart point fragment: 1

Adobe brick fragments: 2

Structure 6 probably formed part of the friary or living quarters for the priests and their assistants. It is one of the sturdy stone structures in close proximity to the church and sacristy, and shows the same orientation as these buildings. The floor of this room was not cleared and consequently many questions, such as the presence or absence of features, artifact content, and whether or not the roof was burned, remain unanswered.

Structure 7 (Fig. 14)

Excavation: Structure 7 was located in the heavily bulldozed portion of the site, but it was partially protected by the primary mission midden

which was mounded around its exterior walls. The interior of the building was cleared down to the floor, the wall bases were completely exposed, and a shallow trench was excavated around the outside of the east and south walls to expose the boulder-covered areas. About one foot of fill on the floor was carefully removed by troweling and most of it was processed through quarter-inch and finer mesh screens.

Location: This structure was situated in the southwest corner of the plaza at approximate grid location N250-W245. Structure 7 extended about 14 feet out beyond the western exterior wall of the enclosure and about 7 feet beyond the south plaza wall (Fig. 3) in the usual manner of a defensive bastion.

Dimensions: The interior dimensions were about 9.5 feet N-S and 27 feet E-W, or about 3.5 by 10 *varas*.

Fill: Lying on the floor was a thick layer of burned roof debris—the largest quantity found in any structure. Above it was about 15 cm. of disturbed fill composed mainly of adobe brick fragments and midden debris from outside the walls. This upper fill produced large quantities of artifacts derived from the mission midden and a few recent artifacts introduced into the upper surface of the fill by the bulldozing operation. The fill was removed in three basic layers: upper fill, roof debris, and fill on floor.

Wall construction: All four walls of this structure were built of dark adobe bricks laid in Pattern No. 4 (Fig. 4, B), one brick length plus one brick width in thickness. From two to four courses of bricks remained in these walls because of the protective mass of midden mounded outside. The walls ranged from about 2 to 3 feet in thickness (average, about one *vara*) depending on the width of the internal cracks between bricks. Against the exterior bases of the south and east walls was a broad band of boulders and cobbles (Fig. 14). It is not known how high these stones may have been stacked against the walls, but they probably were simply low ridges which served to drain rain water away from the bases of the walls which were situated on level ground.

Plaster: No evidence of plaster was found inside or outside the walls of this building or in the fill. The defensive cannons were fired from the top of this bastion.

Floors: The floor of Structure 7, composed of a layer of dark puddled adobe 3 cm. thick, was well preserved beneath the mass of roof debris. The floor was smooth, hard, and relatively level except for a shallow depression about 3 feet wide which ran down the entire length of the north wall base. The floor elevation ranged from 100.46 feet to 100.63 feet and down to 100.24 feet in the depression.

Roof construction: Virtually the entire floor of Structure 7 was covered with a thick layer of well-preserved roof debris. Large quantities of this material were carefully collected to show the exact techniques of roof construction. The roof was constructed in the following manner (Fig. 5, A): (1) Heavy beams (*vigas*) spanned the structure across its short axis. (2) These beams were crossed by a layer of small limbs or sticks (*savinas*). (3) A heavy layer of grass covered the sticks. (4) About 9 cm. of adobe mud tempered with river gravels was poured on the grass. After this layer of mud dried it furnished a strong, waterproof roof. When the structure was burned, large blocks of these roofing materials fell to the floor and were preserved—the beams, sticks, and grass survived as charcoal and the fire-hardened adobe layer retained its smooth upper surface and grass-impressed lower surface.

Doors: One doorway 3 feet wide led out into the plaza through the north end of the east wall. A burned-out post about 15 cm. in diameter on the north interior side of the doorway probably supported the base of a wooden door, and a burned plank on the south interior edge probably was part of the framing for the door (Fig. 14).

Hearths: None was found, although small amounts of wood ash were scattered on the floor. A hearth may have been supported on the stone platform near the southwest corner of the room (see features described below).

Miscellaneous features: Situated near the center and against the base of the east wall (Fig. 14) was a low, triangular platform. The back of this platform, which abutted the wall, was about 3.4 feet wide and was situated just south of the doorway. It extended out into the room about 3 feet at a uniform height above the floor of about 1.0

Fig. 13. Excavation of Structure 7. A, cleared down to floor, looking west; B, feature against south wall and lying on floor.



A



B

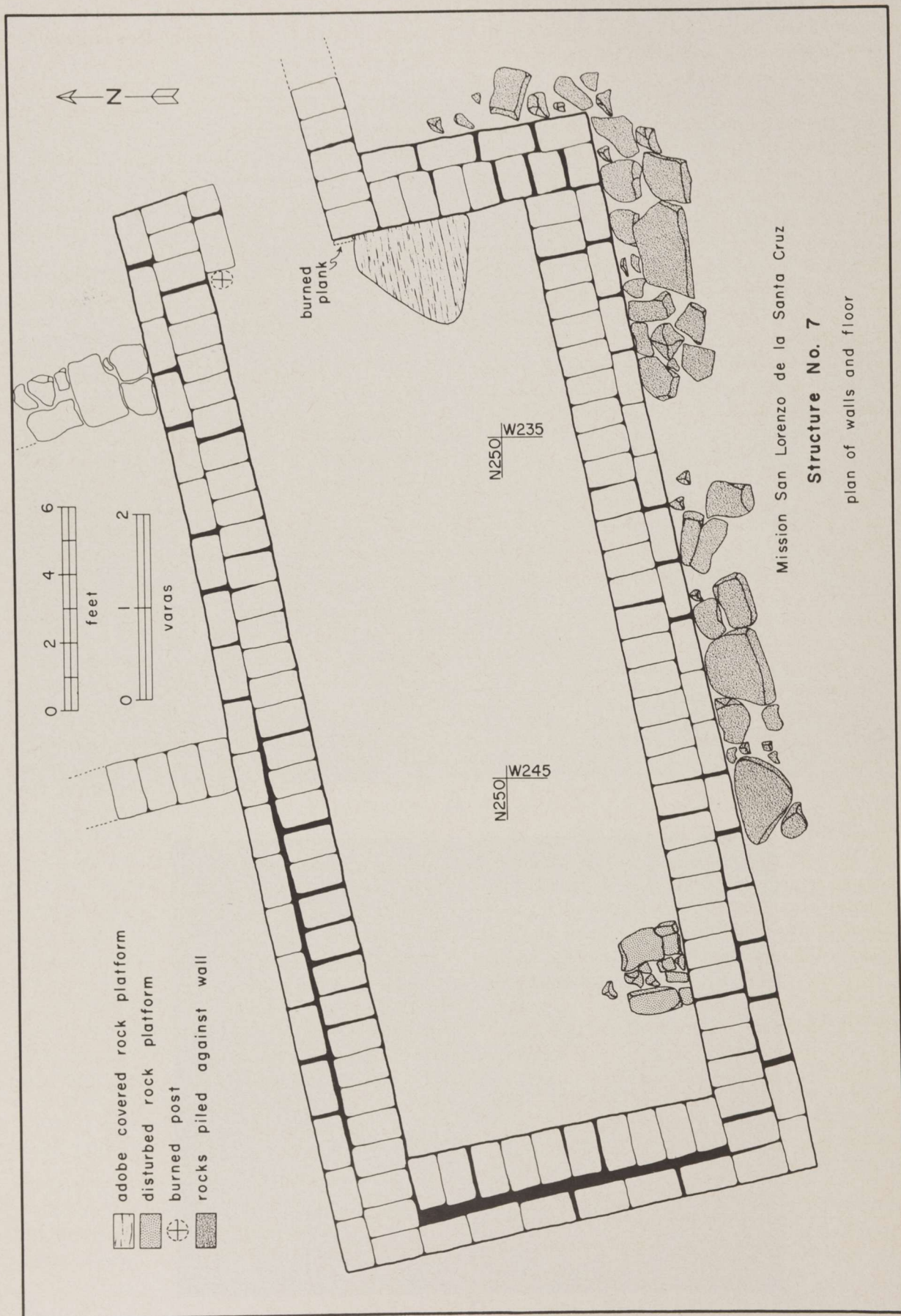


Fig. 14. Structure 7, plan of walls and floor.

foot. The platform consisted of limestone slabs and cobbles, up to about 15 cm. in thickness and 30 cm. in diameter, carefully fitted together with adobe mortar and plastered with adobe to form vertical sides and a smooth, flat, upper surface. There was no sign of burning on the flat surface of this platform and its function is unknown.

Abutted against the interior of the south wall about 3 feet from the west wall was the base of a small rectangular stone platform. This feature was also formed of limestone slabs and cobbles (Fig. 13, B) set in adobe mortar, but it was not plastered on the edges. This platform was about 2.5 feet wide where it joined the wall and extended out into the room about 2 feet. The top of this feature was removed by the bulldozer, but it may have served as a platform for a hearth because wood ash was scattered on the floor around it.

Associated artifacts:

Copper: 2 rolls

Iron: 1 handmade nail

Ceramics: 2 dark gray plainware; 9 amber glaze plainware; 2 clear glaze brown painted ware; 2 majolica

Glass: 2 pale green bottle glass

Stone: 1 Type 2 gunflint; 1 Type 3 gunflint; 3 cutting tools; 1 scraper flake; 2 Type 2 flakes; 6 Type 3 flakes; 9 Type 4 flakes; 16 miscellaneous flakes

Shell: 2 miscellaneous

Bone: 170 food bones

Structure 7 was completely excavated and mapped (Fig. 14). It was situated in the southwest corner of the plaza and probably served as the defensive bastion because: (1) It was the only corner structure which extended beyond the exterior wall of the plaza. (2) Defenders on the roof of this building could direct their fire along the outside of the south and west walls of the plaza. (3) Because of the topography, the southwest corner of the south and west walls of the plaza faced the direction from which an attack was most likely to originate. (4) The mass of heavy roof debris on the floor indicates that this building had an especially strong roof. (5) This was the only structure which had all four walls constructed with the thickest brick pattern No. 4, Fig. 4).

The primary mission midden was mounded from 1 to 2 feet deep around the outside walls of Structure 7 in a broad, fan-shaped deposit. The

debris extending out from the wall 50 to 100 feet was 1.0 and 1.5 feet in depth. This large mound of trash undoubtedly was thrown from the top of the bastion which offered easy access to a sturdy roof. Considering the predominant southwesterly wind, this seems to have been an unfortunate choice of direction for trash disposal. A smaller concentration of midden debris which surrounded the outside northwest corner of the quadrangle (Structure 11) probably was thrown from the roofs of Structures 11, 12, and 13. The middens contained both Spanish and Indian artifacts plus large quantities of food bones, ashes, stones, and other debris.

Structure 8 (Fig. 15)

Excavation: This long, narrow building was heavily damaged by the bulldozing operation. Only about 10 to 15 cm. of fill and wall foundations remained intact. The entire structure was excavated, most of the fill was screened, and a wide strip outside the east, south, and west walls was cleared down to the old ground surface.

Location: Structure 8 was situated in the southeast corner of the plaza at about N278-W120 on the grid. The church (Structure 2) formed the north wall of this building and the south plaza wall lay to the west (Fig. 3). The west end of the building apparently had two doorways.

Dimensions: This building was longer in relation to its width than any other structure uncovered. Its central interior dimensions were about 11.5 feet N-S and 42.3 feet E-W.

Fill: About 10 to 15 cm. of fill composed of topsoil, disintegrated adobe, and cultural debris lay above and on the floor. In several large areas, especially in the western half of this structure, a thin (about 1 cm.) layer of heavily decomposed, brown, fibrous material lay on the floor surface. Samples of this material examined in the lab seem to be the remains of straw and animal manure.

Separated from the floor by several centimeters of soil and adobe wall debris, two large hearths were found in the western end of the building. These contained large amounts of ash, charcoal, and burned earth. The material from in and around these hearths was collected separately from that which was found on the structure floor or in the fill above the floor. All of the fill was removed and processed.

Mission San Lorenzo

Structure 8

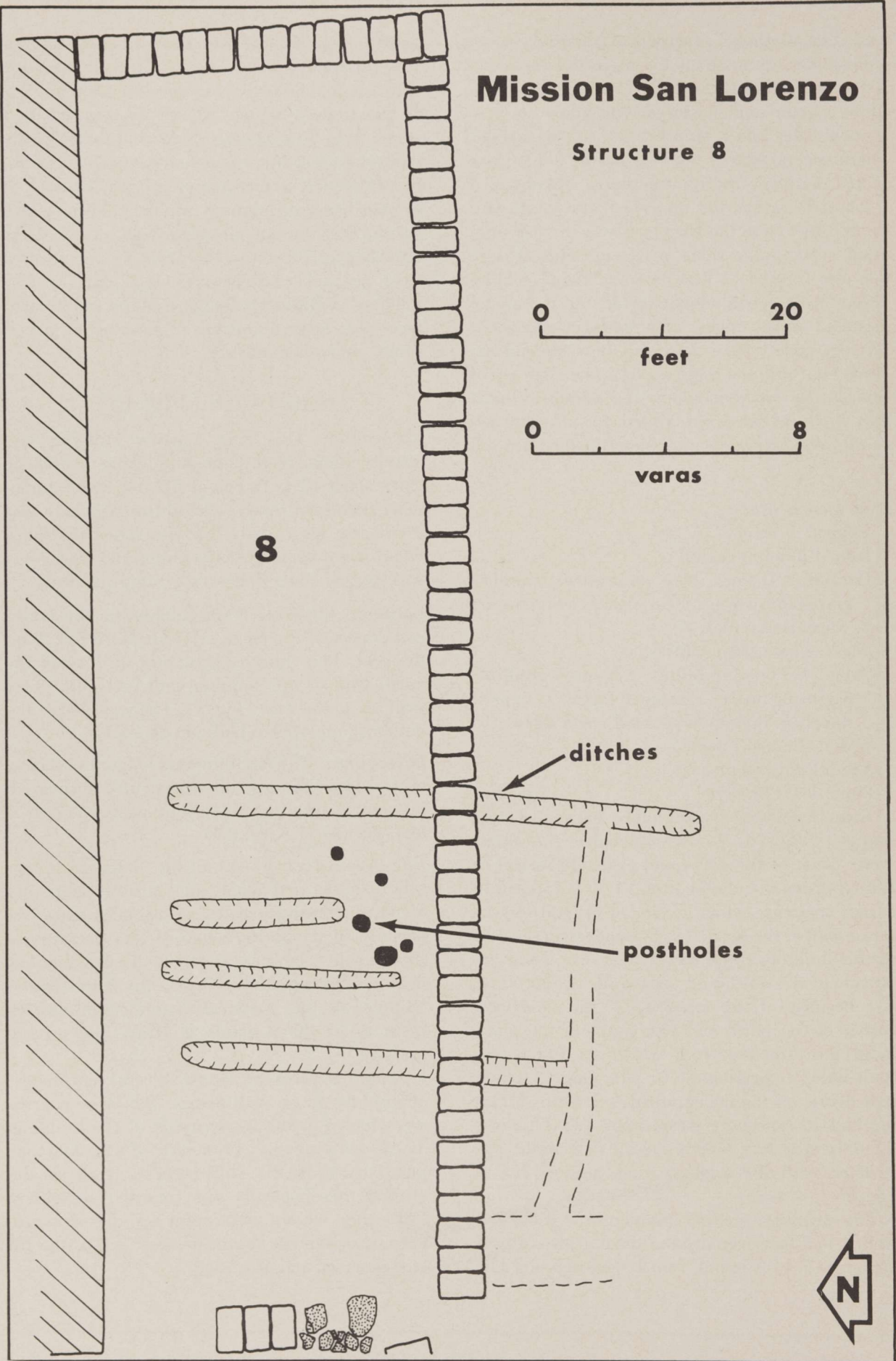
0 20
feet

0 8
varas

8

ditches

postholes



Wall construction: The south wall of the church formed the north wall of Structure 8. The east and south walls were formed by adobe bricks laid one brick length thick in Pattern Nos. 2 and 3 (Figs. 4, C, D). These walls averaged 1.5 feet thick and were built of dark adobe bricks set with dark mortar. There was only about a 5-foot long section of west wall between the two doorways, but it was identical to the south and east walls. The southwest corner of this building was not well aligned with the south plaza wall and a gap of about 2 feet resulted. Exactly how this gap was closed could not be determined, but there were numerous fragments of dark adobe bricks in the vicinity which may have helped plug it up.

Plaster: None was found.

Floors: There was a smooth and hard-packed surface just beneath the decomposed manure layer in this building, but no evidence of a prepared, puddled adobe floor was found. This hard-packed floor was cut by four deep, narrow trenches running along the short axis in the west end of the building, and several scattered postholes were cut through it (Fig. 15). The floor ranged in elevation from 99.47 feet in the northwest corner to 99.05 feet in the southeast corner.

Roof construction: No data.

Doors: Two doorways led through the west wall out onto the plaza—one through the north end of the wall was 4 feet wide and had no threshold or evidence of a door; the one through the south end was about 3 feet wide and had a flagstone threshold made from small limestone slabs (Fig. 15).

Hearths: No data.

Miscellaneous features: Situated in the western end of Structure 8 were four narrow parallel trenches cut through the floor of the building parallel to its short axis (Fig. 15). These trenches ranged from 0.6 to 1.0 foot in width, averaged about 1.0 foot in depth, and were spaced from 1.5 to 3 feet apart. All four trenches originated about 2 feet from the north wall. The east and west ones extended out under the south wall of the building and connected to a cross trench and the other two ended 1 to 3 feet inside the south wall. Small stones, gravel, and soil filled the

trenches up to the floor level. Apparently these served as drainage ditches for the west end of the building.

In a cluster among the trenches were five postholes which penetrated the floor near the south wall. These postholes ranged from 12 to 23 cm. in diameter, were about 30 cm. deep, and were spaced from about 6 to 36 cm. apart.

A cluster of small chunks of limestone lay on the floor about 2 feet from the center of the west wall. There were about 25 stones in this group and they averaged about 10 cm. in diameter.

Associated artifacts:

Copper: 1 patch; 1 perforated overlay

Iron: 3 unidentified objects; 1 bit fragment; 1 pronged object

Lead: 1 sprue; 2 discs

Ceramics: 2 red-slipped plainware; 1 miscellaneous non-wheel-made earthenware; 12 amber glaze plainware; 8 clear glaze brown painted ware; 4 majolica; 7 wheel-made unglazed red-slipped ware

Glass: 2 pale green bottle glass; 21 recent bottle glass (1 bottle)

Stone: 1 Type 5 gunflint; 3 choppers; 1 spoke-shave; 1 Type 1 flake; 1 Type 2 flake; 3 Type 3 flakes; 2 Type 4 flakes; 9 miscellaneous flakes

Shell: 3 scrapers; 3 miscellaneous

Bone: 1 ulna tool; 98 food bones

It is assumed that Structure 8 served as a stable because: (1) The structure had no prepared adobe floor—only a hard-packed dirt floor. (2) Large patches of decomposed manure and straw lay on the floor in the west end. (3) The trenches probably served to drain away animal waste products and keep the floor relatively dry. (4) The postholes situated among the trenches probably mark the locations of tether posts for animals which were kept in the area.

The eastern half of the building had a clean floor which was devoid of features and, if the building was indeed a stable, may have served for storage of hay for the animals. If these interpretations are correct, the building may have accommodated several choice milk cows and a few fleet horses for use by the missionaries.

In the fill above (and separated from) the floor of this structure were several large hearths filled with ash and food debris and numerous Spanish and Indian artifacts. It is probable that this represents a temporary campsite made in the

Fig. 15. Structure 8 showing ditches and postholes.

lee of the church walls after the mission was burned and abandoned. One broken bottle in a disturbed area probably was left during the Camp Wood occupation in the mid-nineteenth century.

Structure 9 (Fig. 12)

Excavation: Structure 9 was in the heavily bulldozed portion of the site. Wall foundations were completely exposed so the exact size, location, and orientation of the building could be recorded, but the fill was not excavated. Several centimeters of fill still remained on the floor.

Location: Structure 9 was situated against the central portion of the east quadrangle wall between Structures 3 to the north, 6 to the west, and 5 to the south. Its grid location was about N345-W107 and the long axis was oriented with magnetic north.

Dimensions: The central interior dimensions were about 30 feet N-S and 14 feet E-W, or about 5 by 11 *varas*.

Fill: Some dark soil and roof debris covered the floor of the building.

Wall construction: All four walls were made of unprepared limestone slabs, up to 2.5 feet in diameter and averaging about 0.3 foot in thickness, set in dark brown clay mortar and leveled and spaced with limestone slivers. From one to two courses of stone remained in the wall foundations except for the east end of the north wall and the west end of the south wall which had been completely removed during the bulldozing of the site. The remaining wall foundations averaged about 2.7 feet or 1 *vara* in thickness.

Plaster: No data.

Floors: A shallow test pit in one corner of the room indicated that the floor was made of puddled adobe.

Roof construction: No data.

Doors: Apparently there had been a doorway in the center of the south wall leading into Structure 5, but it was heavily damaged by the bulldozer. It is possible that there was also a doorway leading through the east end of the north wall into Structure 3.

Hearths: No data.

Miscellaneous features: No data.

Associated artifacts: None.

This large and sturdily built structure probably was part of the friary which was built at the same time as the sacristy (Structure 5 to the south) and the church.

Structure 10 (Fig. 17)

Excavation: This was the first structure excavated in the unbulldozed portion of the site. It was visible on the surface as a large smooth mound covered with vegetation—no walls or outlines were visible. After the vegetation was cleared, the bases of the adobe walls were encountered just beneath the grass roots (Fig. 19, B). About 3 feet of stratified fill was removed from the inside of the building, exposing the entire floor. The fill in the east third of the building was removed in arbitrary levels down to the floor, then the remainder of the fill was excavated by natural strata using the vertical profile (Fig. 18) as a guide. The fill against the outside of the walls was left undisturbed to help protect the walls, and at the end of the field season this structure was backfilled in order to preserve it.

Location: Structure 10 occupied the northeast corner of the quadrangle at about N412-W115 on the grid. The main gate leading into the plaza from outside was just south of this building, and the area to the west was not excavated.

Dimensions: The outside wall dimensions were 36.2 feet north, 16.2 feet east, 33.6 feet south, and 15.8 feet west. The central interior dimensions were 11.2 feet N-S and 30.6 feet E-W, or about 4 by 11 *varas*.

Fill: About 3 feet of well-stratified fill in this structure showed clearly how the buildings of San Lorenzo had filled and become low mounds (Fig. 18). (1) Lying on the flagstone floor was from 12 to 35 cm. of loose, grayish soil which contained large quantities of burned roof material and wall plaster which probably was deposited as the building was burned and abandoned. (2) Above this material was a layer of dark brown sandy soil from 15 to 40 cm. thick which probably drifted into the ruined structure before the walls began to collapse. It contained



Fig. 16. Excavation of northeast corner of quadrangle showing Structure 10 with its cobbles floor. Looking east.

an occasional stone but was otherwise sterile. (3) Next was a layer composed almost entirely of melted adobe and fragments of adobe bricks, and it must have represented the material deposited by the walls as they collapsed down to where they were protected by the growing mound of debris. (4) The top layer, lying on the collapsed wall material and covering the remaining wall bases, was a dark brown sandy soil from about 15 to 40 cm. in thickness.

Wall construction: All four walls were built with adobe bricks—the north, east, and south walls were one brick length plus one brick width in thickness and generally were in Pattern No. 4 (Fig. 4, B), and the west wall was one brick length in thickness in Pattern No. 3 (Fig. 4, D). At several places in the walls there were anomalies in the brick patterns (Fig. 19, C, D) such as several courses of bricks laid identically (one brick directly superimposed on the one below) without breaking the joints. These anomalies were usually not more than three courses in height and four bricks in length.

The east wall and about 3 feet of the east end of the north wall were oriented exactly with magnetic north (and the grid) but the remaining walls were oriented about 15 degrees off magnetic north. This gave the building an unusual outline (Fig. 17). The masons may have begun Structure 10 by laying the base of the east wall oriented with the previously finished buildings, but when they turned the corner and began laying the north wall they found that a rather steep slope made it necessary to orient the remaining walls of the structure about 15 degrees off magnetic north. As construction progressed around the quadrangle (probably along the north wall, then the west wall, and finally the south wall, back to the original buildings) the new structures were all oriented off-north like No. 10.

The walls of Structure 10 were preserved beneath the mound of rubble to a height of about 3 feet. The north, east, and south walls averaged about 2.7 feet or 1 *vara* in thickness.

Plaster: Large quantities of wall plaster were found in the debris on the floor. This plaster, made of fine river sand and lime, was very similar to that found on the interior of the church. It averaged from 1 to 3 cm. in thickness and some fragments showed evidence of having been

applied in two layers with whitewash between. Some plaster was still in place along the base of the east and south walls.

Floors: This was the only building excavated which had a flagstone floor. Since this was the storehouse and granary, a good dry, durable stone floor was probably considered to be a necessity.

The flagstones were all limestone slabs up to about 3.5 feet in diameter, but averaging about 2 feet in diameter and 0.5 foot in thickness. Spaces between the larger stones were filled with small limestone fragments (Fig. 19, A) and a dark brown clay mortar filled the cracks and kept the stones tightly in position. The floor was quite smooth but sloped slightly from east to west with a maximum elevation of 98.75 feet along the east wall and a minimum of 98.03 feet along the west wall.

Four flagstones, all about 1 foot in diameter, had been removed from the floor. Three of these were situated along the south wall in the west end of the room and the other was centrally located about 5 feet from the center of the west wall (Fig. 17).

Roof construction: The roof was constructed like that described for Structure 7. Large quantities of burned roof debris lay on the floor and various samples of it were collected.

Doors: One doorway led from the building, through the south-central part of the west wall, into the plaza. This doorway was 3.7 feet wide and the walls abutting it were faced with vertical adobe slabs about 0.3 foot in thickness. There was no evidence of how the door had been attached to this opening. A layer of sandy plaster about 0.1 foot thick served as a threshold and extended out into the room for about 1.5 foot.

Hearths: Apparently there was none.

Miscellaneous features: As previously mentioned, four small flagstones had been removed from the floor—three adjacent to the south wall and one centrally situated near the doorway. This latter hole was cleaned out and contained a post mold about 15 cm. in diameter extending about 30 cm. below floor level. Each of these four features probably represents where posts were inserted in the floor and served to brace sagging *vigas* in the roof.

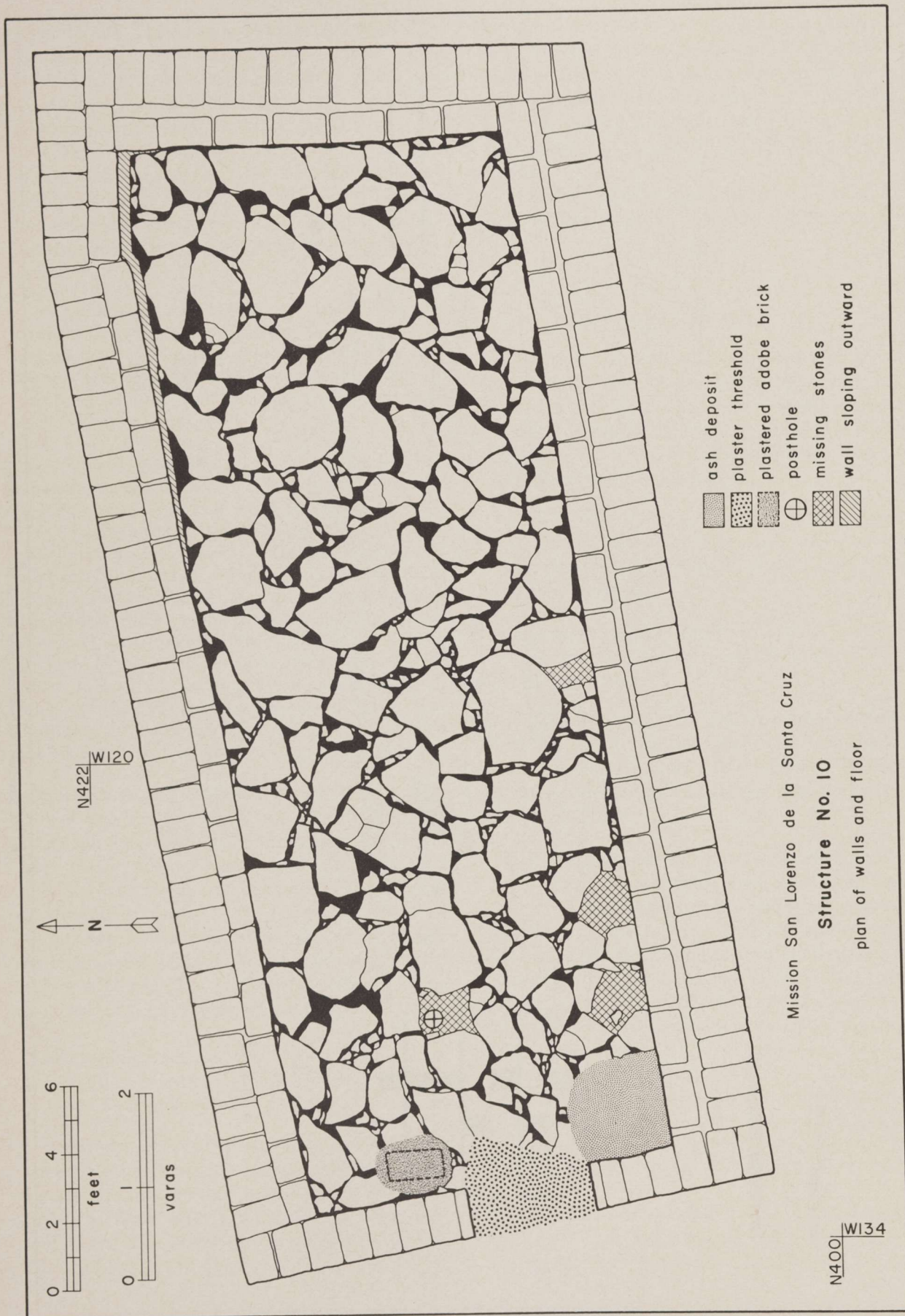


Fig. 17. Structure 10, plan of walls and floor.

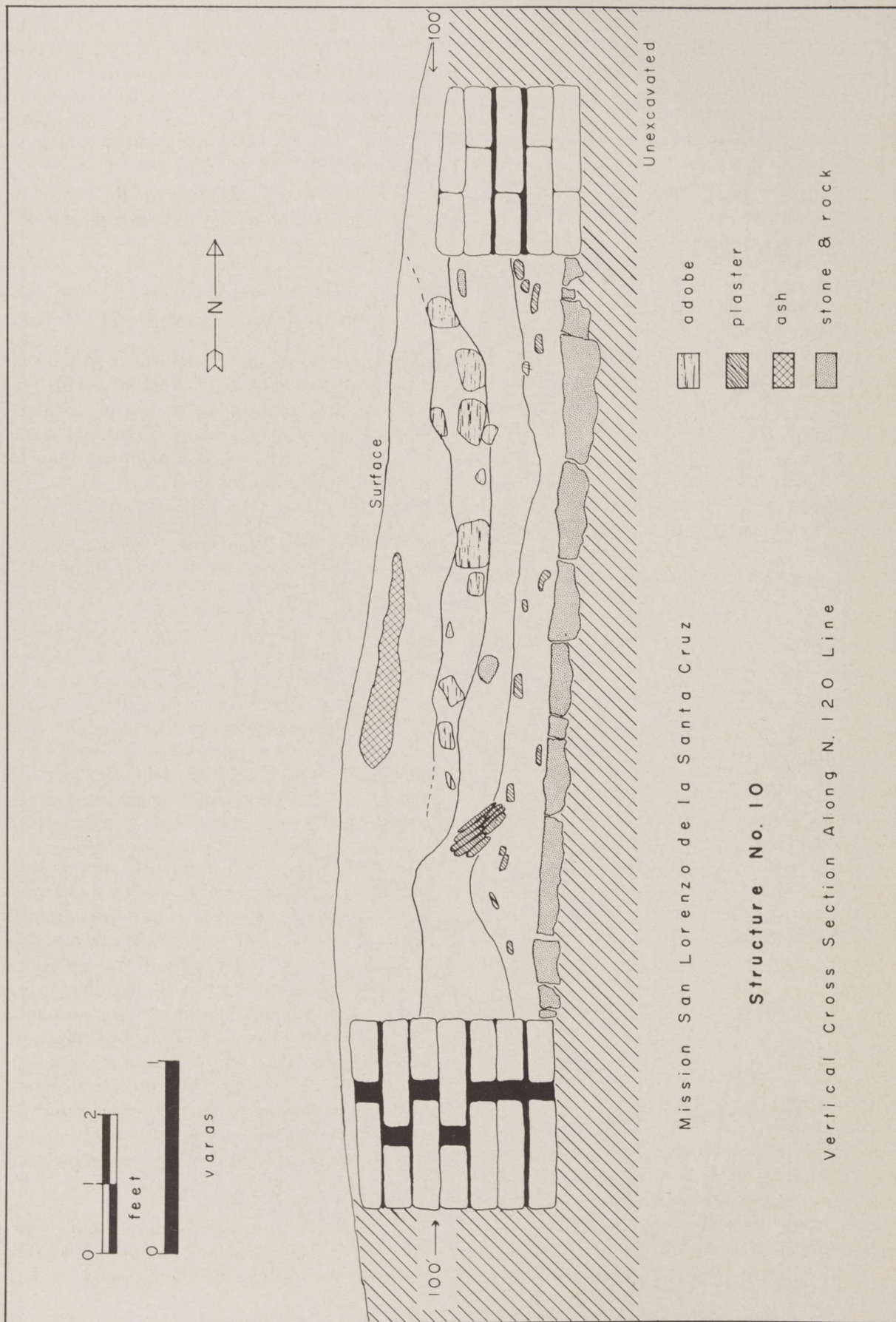


Fig. 18. Structure 10, vertical cross section along N. 120 line.

Along the base of the south wall, about 10 feet from the west wall, there was a crack about 0.1 foot wide, 2 feet long, and 0.5 foot deep between the plaster and the brick wall. This cavity was completely filled with grains of shelled corn (Fig. 60) which had apparently fallen through cracks in the plaster and were charred when the building burned. Dr. Hugh Cutler of the Missouri Botanical Gardens furnished the following comments on the charred corn grains found in Structure 10:

. . . carbonized kernels, mainly from 14–16–18-rowed long-grained dents, similar to recent Southern and some Mexican dents. There are a few kernels from 8 or 10-rowed ears, usually shorter and broader in proportion and apparently also dent corn. The long-grain dents are 4–5 mm. thick, 8–9 mm. wide, 10–11 mm. long. A few have a burned area in the center of the top of the grain and the surrounding hard shoulders are puffed out. All kernels were carbonized when loose, not on cobs. . . . These dent corns are similar to some Southern dents which were grown in the delta region and perhaps along part of the east Texas coast in early historic times and may have been grown there in prehistoric times. I suspect that your [the San Lorenzo] dents came from Mexico where a number of races of corn, with kernels almost identical to yours, may still be found today and has been grown since at least 1300 A.D. In other words, your [San Lorenzo] corn is probably introduced from Mexico and does not represent the native kinds of corn.

Situated in the southwest corner was a stockpile of fine quality lime about 3 feet in diameter and a maximum of 0.83 foot in height. This probably was produced in the mission limekiln and used to make fine plaster for the buildings and as a whitewash.

Just north of the doorway and about 10 cm. from the wall, a single adobe brick lying on its side was plastered to the floor. It possibly served as a kneeling block beneath an icon.

Associated artifacts:

Ceramics: 2 amber glaze plainware
Bone: 10 food bones

Structure 10 was the best preserved of all the excavated buildings. This undoubtedly was the storehouse and granary mentioned in the documents as being built after the church, sacristy, and friary. The following data support this identification: (1) It was a sturdily constructed

building, situated near the main gate, and the only structure with a durable, dry, flagstone floor. (2) Shelled corn was found between the plaster and the wall (the only occurrence at the site). (3) Pure white lime was stored in one corner. (4) There was no hearth for either cooking or heating.

Structure 10 was backfilled at the end of the field season to protect it from weathering and vandals.

Structure 11 (Fig. 21)

Excavation: Structure 11 was situated in the northwest corner of the quadrangle. This area was not bulldozed and was covered with low mounds of rubble supporting cactus and shrubs (Fig. 23, A). The fill of the room was removed by natural strata and screened.

Location: This room was in the extreme northwest corner with Structure 12 to the east and Structure 13 to the south. It was at about N397-W274 on the grid.

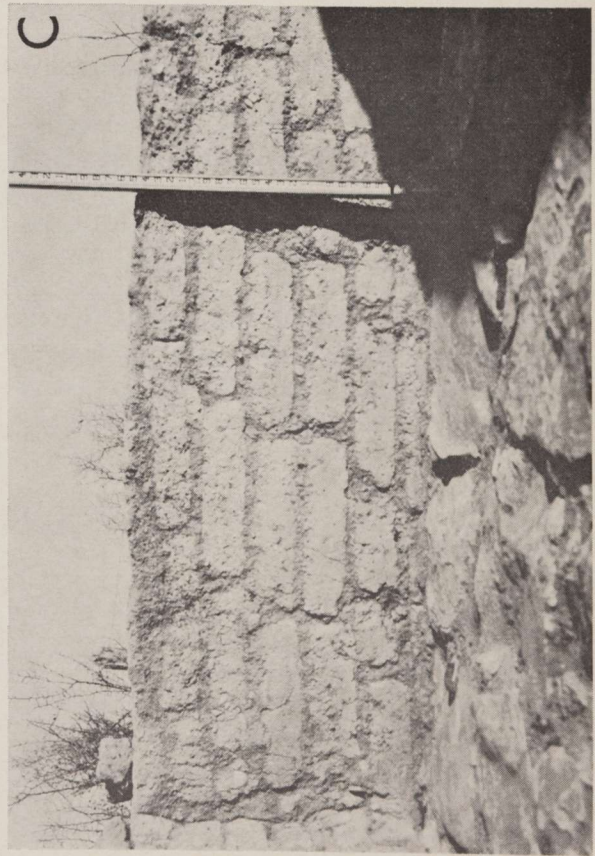
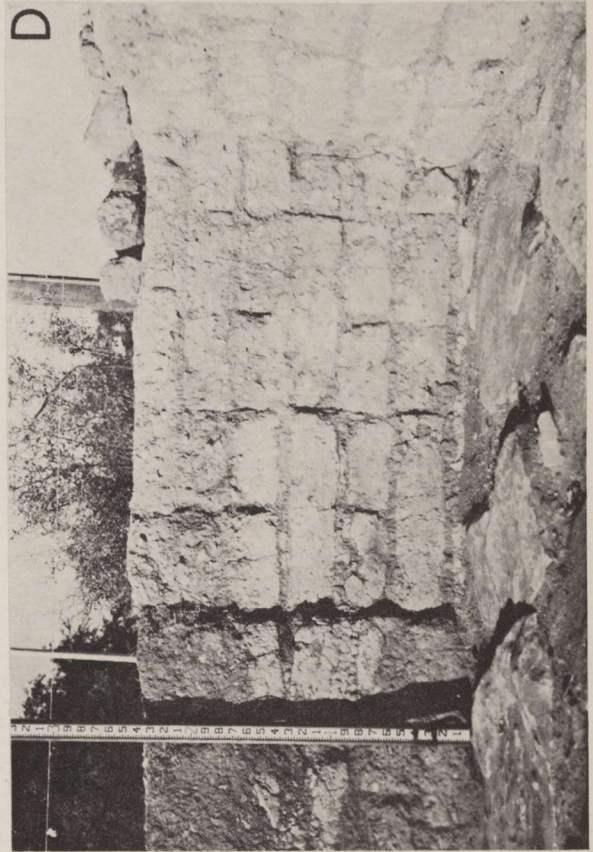
Dimensions: The interior dimensions of this room were 11.3 feet N-S and 14.2 feet E-W, or about 4 by 5 *varas*.

Fill: The fill was very similar to that of Structure 10, but it was only about 1.5 feet deep. A relatively large quantity of food bones, artifacts, and other debris lay on the floor beneath the roof and wall rubble.

Wall construction: All four walls were built of adobe bricks. The north, west, and south walls were one brick length plus one brick width in thickness (Pattern No. 4, Fig. 4, B) and averaged about 2.5 feet thick. The east wall was a partition one brick width in thickness (Pattern No. 1, Fig. 4, A) which was interlocked into the more massive side walls (Fig. 21). The remaining wall bases were from 1 to 1.5 feet high.

Plaster: Fragments of coarse, thick, dull brown plaster were found in the fill and around the bases of the walls in a few places. These fragments were up to 3 cm. thick and some had been applied in 2 or 3 layers.

Floors: The floor consisted of the smooth surface of limestone bedrock which had been leveled by filling the low spots with puddled adobe—about



50 per cent of the floor area was covered with the patches of adobe (Fig. 21). The floor ranged from 98.63 to 99.51 feet in elevation.

Roof construction: The roof construction was the same as described for Structure 7. Small quantities of burned roof debris lay on the floor fill.

Doors: One doorway led from this room through the eastern end of the south wall, into Structure 13. This doorway was 2.9 feet in width, and had a threshold composed of two layers of adobe bricks (about 0.66 foot in height) capped with a layer of puddled adobe about 0.2 foot thick. The exterior edge of this threshold ended in an abrupt step, but on the inside of the room a fan-shaped, puddled adobe ramp sloped gently from the threshold down to the floor (Fig. 21). There was no evidence to indicate how a door was attached to close this doorway.

Hearths: There were several lenses of wood ash on the floor, but no intensively burned area was found.

Miscellaneous features: From 20 to about 40 cm. of midden debris was mounded against the exterior north wall of this room (Fig. 3) and probably was thrown from its roof.

Associated artifacts:

Iron: 1 unidentified lump

Lead: 1 disc

Ceramics: 1 non-wheel-made red-slipped plainware; 8 amber glaze plainware; 1 majolica;

1 stoneware, white, salt-glazed

Glass: 1 pale green flat glass

Stone: 1 Type 5 gunflint; 1 spokeshave; 1 Type 1 flake; 4 Type 2 flakes; 3 Type 3 flakes; 1 Type 4 flake; 10 miscellaneous flakes; 1 metate fragment; 1 chert core, No. 2

Bone: 182 food bones.

The occurrence of a metate fragment, numerous chert flakes, a large chert core, cactus fruit seeds, and many food bones suggests that a family of mission Indians may have used this structure. The mission soldiers may have lived in rooms nearer the bastion (Structure 7). Structure 11 was backfilled for preservation.

Fig. 19. Excavation of Structure 10. A, flagstone floor; B, horizontal adobe brick patterns in wall at southeast corner; C, vertical adobe brick patterns in east wall; D, vertical adobe brick patterns, north wall.

Structure 12 (Fig. 21)

Excavation: This room, located in the unbulldozed part of the site, was completely excavated. About 1 to 1.5 feet of fill was removed by natural strata and screened, but the room was back-filled before the end of the field season.

Location: This room was situated against the north wall just east of Structure 11 in the northwest corner and adjacent to Structure 15. The approximate grid location of Structure 12 was N400-W258. It was one of a row of small rooms separated by narrow partition walls.

Dimensions: The central interior dimensions of Structure 12 were 11.3 feet N-S and 14 feet E-W, or about 4 by 5 *varas*.

Fill: About 1.5 feet of fill, stratified in the usual manner, lay above the floor, and living debris littered the floor surface.

Wall construction: The north and south walls were made of adobe bricks, one brick length plus one brick width in thickness (Pattern No. 4, Fig. 4, B), and the east and west walls were adobe brick partitions only one brick width in thickness (Pattern No. 1, Fig. 4, A). The wall bases were from 1.5 to 2.0 feet in height after excavation.

Plaster: Fragments of coarse brown plaster up to about 3 cm. thick were found in the fill and adhering to the bases of the walls in several places.

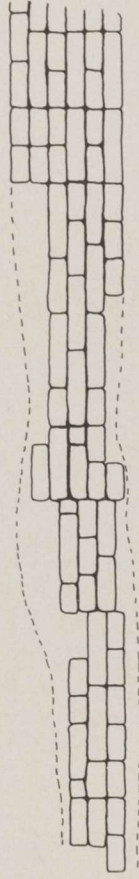
Floors: A single puddled adobe floor had been poured over the uneven surface of limestone bedrock. The exposed bedrock surface formed the floor in the northwest corner of the room (Fig. 21). The adobe floor ranged up to about 4 cm. in thickness and had a smooth, hard, upper surface. The floor ranged from 99.30 to 99.57 feet in elevation.

Roof construction: Small fragments of burned roof debris from the fill indicated that the roof was constructed in the same manner as described for Structure 7.

Doors: One doorway, leading through the east end of the south wall (Fig. 21) into the plaza, was 3.2 feet wide. It showed no evidence of facing, or of a prepared threshold, or how the door was hung.

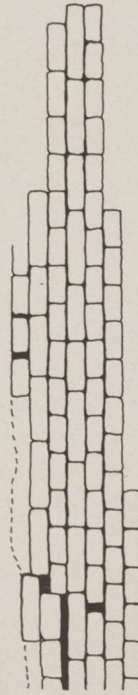
Hearths: A hearth was situated in the adobe floor about 2.5 feet from the center of the south

→ E



North Wall Looking North

E ←



South Wall Looking South

Mission San Lorenzo de la Santa Cruz

Structure No. 10

Brick Patterns in N. & S. Walls

Fig. 20. Structure 10, brick patterns in north and south walls.

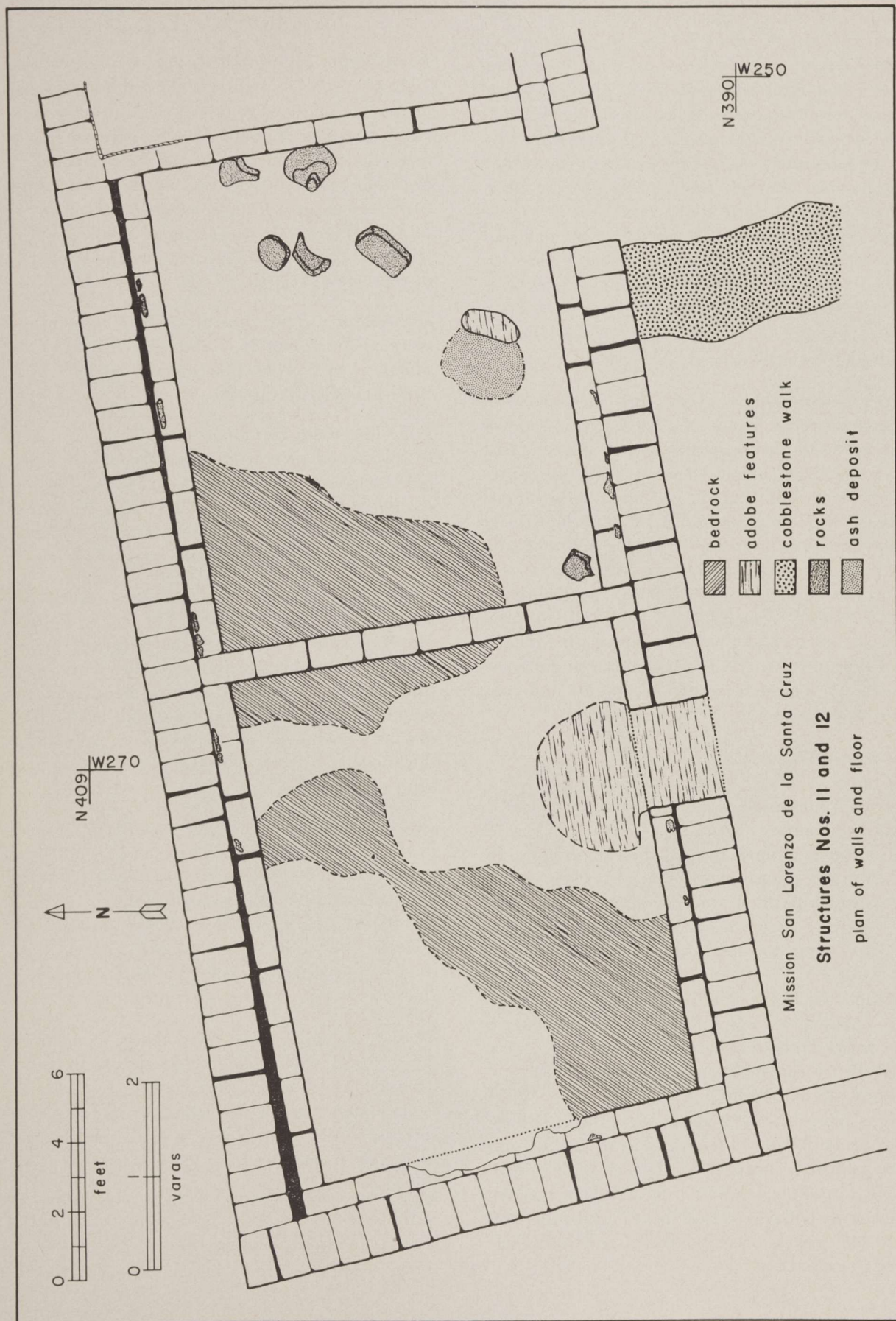


Fig. 21. Structures 11 and 12, plan of walls and floor.

wall of the room. It consisted of a circular depression in the floor about 2.5 feet in diameter and 0.13 foot in maximum depth. This depression was baked hard and contained light gray wood ash which produced evidence of burned eggshells and bone slivers when examined microscopically in the laboratory. Along the southeast edge of the depression—between the hearth and the doorway—was a smooth adobe ridge about 15 cm. high which probably served as an air deflector for the fire (Fig. 21). This feature apparently was formed by a fragment of an adobe brick which had been smoothly plastered to the floor. This was the only complete, prepared hearth found in the structures at San Lorenzo.

Miscellaneous features: Six large river-smoothed limestone rocks lay on the floor of this room—one in the southwest corner, two against the east wall, and three about 3 feet out from the center of the east wall (Fig. 22). These stones ranged from 1 to 2 feet long and 0.3 to 0.66 foot thick. They do not seem to have been incorporated into platforms and their function is unknown.

At the west edge of the doorway, a cobblestone walk about 2.7 feet (1 *vara*) wide led from the exterior surface of the wall southward into the plaza (Fig. 3). It was composed of a single layer of closely spaced limestone fragments and cobbles from about 6 to 15 cm. in diameter.

Associated artifacts:

Copper: 2 strips

Iron: 1 handmade nail

Lead: 1 sprue

Ceramics: 2 dark red polished plainware; 28 amber glaze plainware; 13 clear glaze brown painted ware; 3 green glaze olive jars; 2 majolica; 1 wheel-made unglazed red-slipped ware; 1 dark brown appliquéd ware

Stone: 1 scraper blade; 1 scraper flake; 4 Type 2 flakes; 5 Type 3 flakes; 1 Type 4 flake; 6 miscellaneous flakes

Shell: 3 scrapers; 2 miscellaneous

Bone: 46 food bones

It is likely that this room served as a habitation, probably for Indians living in the mission establishment, because: (1) It was small in size. (2) It contained a hearth. (3) The floor was littered with potsherds, food bones, and other debris. (4) Chert tools and flakes and red ochre were found on the floor.

Structure 13 (Fig. 24)

Excavation: This small room, like the two preceding ones, was situated in the unbulldozed area of the site and was relatively well preserved beneath mounds of melted adobe covered by native vegetation. It was completely excavated.

Location: Structure 13 was near the northwest corner of the quadrangle between Structures 11 and 14 (Fig. 3). It was at about N387-W270 on the grid, and its short axis was oriented about 15 degrees west of north.

Dimensions: The central interior dimensions were about 7 feet N-S and 14.4 feet E-W, or about 2.5 by 5 *varas*. This was the smallest structure excavated at the site.

Fill: The room contained from 1.5 to 2 feet of fill composed primarily of melted adobe, adobe brick fragments, roof debris, artifacts, wind-deposited sand, and an especially large amount of wall plaster (described below). The fill was carefully excavated by hand and screened.

Wall construction: The north, west, and south walls were made of adobe bricks laid in Pattern No. 4 (Fig. 4, B). The north wall was shared with Structure 11 and the south wall with Structure 14. The east wall, facing the plaza, was made of flat limestone slabs set with brown clay mortar. The walls averaged about 2.2 feet in thickness and were standing about 2 feet high after excavation.

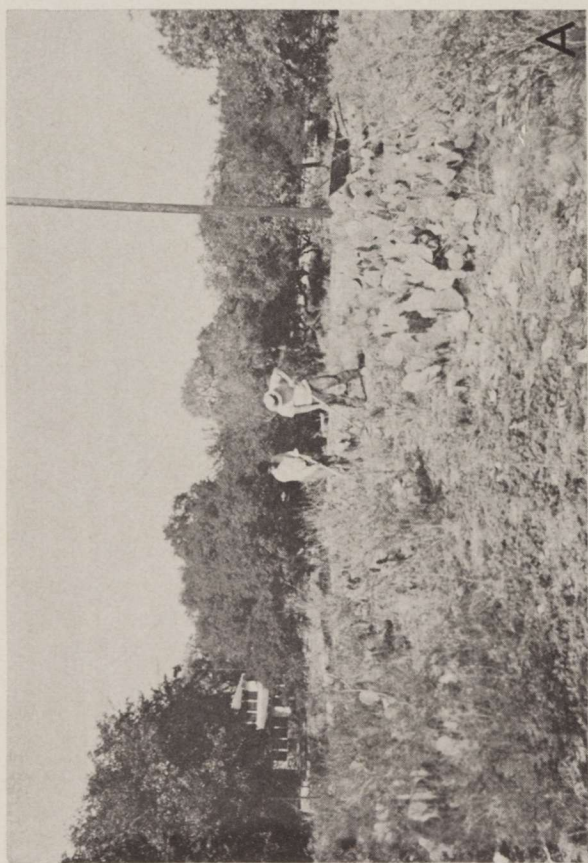
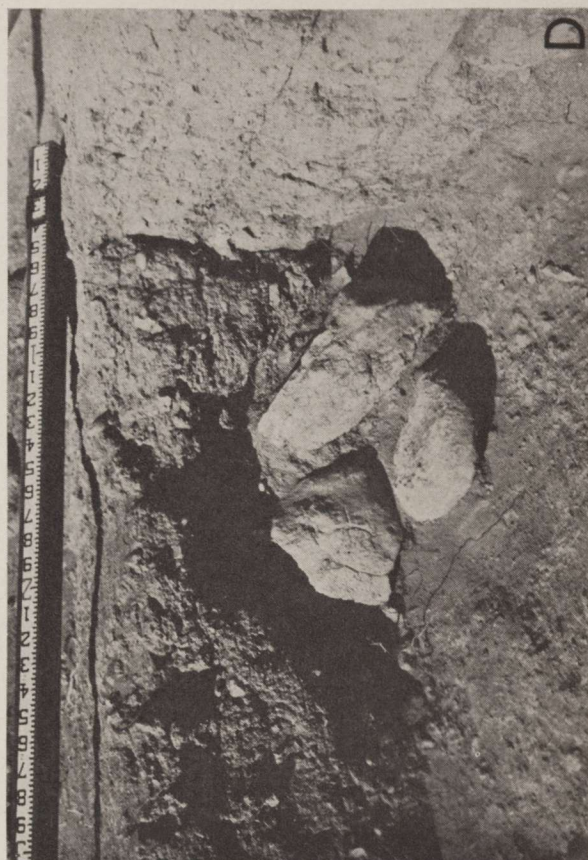
Plaster: Large quantities of plaster were present in the room fill and on the bases of the south and west walls. This plaster ranged from 0.2 to 0.3 foot in thickness and some fragments up to 2 feet in diameter were collected. The plaster, composed primarily of lime, ash, and soil, was light in weight. It contained very little sand and showed no sign of paint or whitewash.

Floors: A single adobe floor about 3 cm. thick lay partially on limestone bedrock and partially on dark brown topsoil. Penetrated by the large hearth (described below), the floor had a smooth surface, sloped slightly east to west, and ranged in elevation from 99.19 to 99.60 feet.

Roof construction: Some small fragments of burned roof found in the fill indicated that it was constructed in the same manner as that of Structure 7.



Fig. 22. Structure 12 after excavation, showing features on adobe floor. Looking southwest.



Doors: One doorway led through the east end of the north wall (see Structure 11 for description). Another doorway, about 2.6 feet or 1 *vara* in width, opened through the north end of the east wall into the plaza. It showed no evidence of a threshold nor how the door had been attached. A disturbed area near the east end of the south wall (Fig. 24) appeared to be a doorway which had been plugged with adobe brick fragments and stones. Its original characteristics could not be determined.

Hearths: One large oval hearth occupied the southwest corner of this small room (Fig. 24). It was about 5 feet long NE-SW, and about 4 feet wide, and penetrated the floor to a depth of about 0.66 foot. It consisted of a large, unlined pit which showed some evidence of burning on the bottom and around the edges. The pit contained about 20 cm. of concentrated, light gray wood ash, a few potsherds, some rust fragments which had probably been nails, and microscopic fragments of burned eggshell, bone and other debris.

Miscellaneous features: In the northwest corner of the room, a hole about 2 feet wide and 1 foot high penetrated the exterior quadrangle wall at floor level. Three large smooth limestone cobbles were wedged into the hole to plug it (Fig. 23, D). This feature may have served as a ventilator to create a draft for the large hearth described above.

Associated artifacts:

Copper: 1 roll; 1 rivet; 1 perforated overlay; 1 buckle

Iron: 5 unidentified lumps; 5 unidentified objects; 1 ladle

Ceramics: 2 polychrome polished; 4 red polished decorated ware; 4 red-slipped plainware; 1 non-wheel-made miscellaneous; 48 amber glaze plainware; 20 clear brown painted ware; 1 green glaze olive jar; 3 miscellaneous lead glazed; 14 majolica; 7 wheel-made unglazed red-slipped ware; 1 dark brown appliquéd ware; 3 hard paste blue featheredge

Glass: 1 pale green flat glass

Beads: 1 coral; 3 glass

Stone: 1 type 5 gunflint; 1 cutting tool, 1 scraper flake; 1 spokeshave; 3 Type 2 flakes; 5 Type 3 flakes; 4 Type 4 flakes; 13 miscellaneous flakes

Shell: 1 miscellaneous

Bone: 6 cut ribs; 475 food bones

This small structure probably served as a food preparation room for the following reasons: (1) There was a very large ash basin in the floor and a probable vent hole in the wall. (2) The floor was littered with potsherds and food bones. (3) A common kitchen would have made it unnecessary to have large cooking hearths in other quarters—and most structures did not contain hearths. (4) From a kitchen in this corner, food rations could have been conveniently distributed to soldiers and Indians in the rows of living quarters along the west and north walls. (5) A copper pot rivet and an iron ladle were found on the floor.

Structure 14 (Fig. 24)

Excavation: Structure 14, undisturbed by the bulldozer, was one of the last rooms excavated and could not be completely cleared before the end of the field season.

Location: This room was situated along the northern end of the west side of the quadrangle between Structures 1 and 13 at about N370-W268 on the grid.

Dimensions: The interior width near the north end was 14.1 feet or about 5 *varas*. Other dimensions were not determined.

Fill: About 2 feet of the usual fill lay above the floor of this building. There was an especially thick layer (up to about 8 cm.) of refuse between the floor and the fallen roof and wall debris which seemed to have accumulated while the structure was in use. In order to accelerate excavation, the upper fill was removed rapidly with shovels, but the material on the floor was troweled up and processed on the screens.

Wall construction: The north and west walls were about 2.3 feet thick and made of adobe bricks laid in Pattern No. 4 (Fig. 4, B), the west wall forming part of the exterior quadrangle

Fig. 23. Excavation in northwest corner of quadrangle. A, initial clearing; B, adobe floor on bedrock in Structure 11; C, burned roof support post in floor of Structure 14; D, boulder-plugged hole in west wall of Structure 13.

wall. The east wall, facing the plaza, was built of unshaped limestone slabs up to about 2 feet across and 0.4 foot thick set in dark brown clay mortar. This wall was about 2 feet thick and was not as carefully constructed as were the stone walls of Structures 5, 6, and 9. When the fill was cleared, the wall bases stood about 2 feet high.

Plaster: There were traces of thick wall plaster in the north part of this room. The plaster was composed of soil with a small amount of lime and sand and it decomposes easily through weathering.

Floors: This structure had a prepared floor composed of dark dirt adobe. The upper floor surface was smooth but somewhat undulating and sloped upward slightly toward the north. The floor elevation ranged from 99.17 to 99.61 feet.

Roof construction: Small quantities of burned roof material in the fill of this room indicated that the roof was constructed like that of Structure 7. A few large fragments of charred *vigas* were oriented east-west and had apparently spanned the room across its short axis.

Doors: One doorway about 2.7 feet wide led through the east end of the north wall into Structure 13 at one time. This doorway had been thoroughly plugged with adobe bricks sometime during the mission occupation and its original characteristics could not be determined. Perhaps smoke from the large hearth in Structure 13 led to the plugging of this doorway. In the part of Structure 14 excavated, no other entrances were found.

Hearths: No prepared hearths were found in Structure 14, but there was a concentration of fine gray ash about 1.5 feet in diameter and 0.1 foot thick situated about 18 feet from the north wall and 3 feet from the west wall. Here, as in other structures, a small fire was apparently maintained directly on the floor.

Miscellaneous features: (1) Centered about 6 feet from the north wall and 4 feet from the east wall was a circular concentration of limestone slabs. This group of rocks, lying on the floor, was about 4 feet in diameter and the individual stones ranged from about 0.3 to 2.0 feet across. There were at least 25 stones in this concentration. Its function is unknown. (2) Seven large smooth chunks of limestone were laying on the floor (Fig. 24). These stones ranged in size from 1.0 foot in diameter and 0.3 foot thick, up to 2.0 feet in diameter and 1.0 foot thick, and like the ones in Structure 12, probably constituted part of the furnishings of the room. (3) The basal portion of the two burned-off posts were found near the west wall. These posts had been inserted in holes through the adobe floor. One post base, 0.5 foot in diameter, was centered 1.5 feet from the north wall and 1.2 feet from the west wall. These posts were probably installed to support the ends of sagging *vigas* and were destroyed when the structure was burned.

Associated artifacts:

Copper: 2 strips; 1 perforated overlay

Iron: 1 disc lunate

Lead: 1 ring

Ceramics: 1 polychrome polished; 4 dark red polished plainware; 28 amber glaze plainware; 13 clear glaze brown painted ware; 1 green glaze olive jar; 5 majolica

Glass: 1 pale green flat glass

Stone: 1 Type 1 gunflint; 1 Type 3 gunflint; 2 Type 2 flakes; 2 Type 3 flakes; 1 Type 4 flake; 9 miscellaneous flakes

Shell: 1 miscellaneous

Bone: 1 ulna tool; 1 cut rib; 118 food bones

The large amount of debris, apparently accumulated while the room was in use, would indicate that it served as living quarters. Spanish and Indian artifacts found on the floor along with a large quantity of food bones included such things as a complete bison scapula.

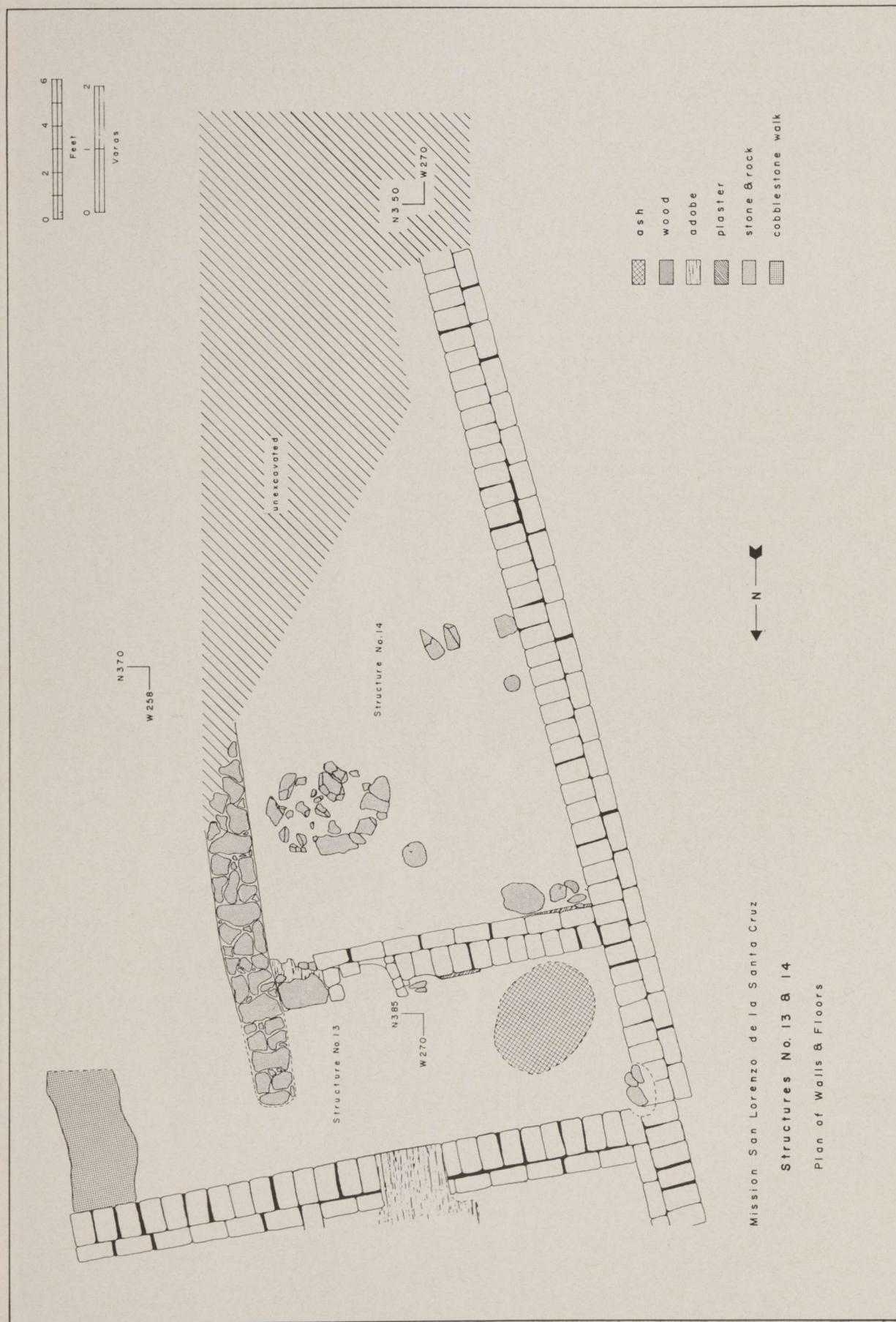


Fig. 24. Structures 13 and 14, plan of walls and floor.



Fig. 25. Excavation of northwest corner of quadrangle showing Structures 11-14, looking west. Nueces River is visible through trees in background.

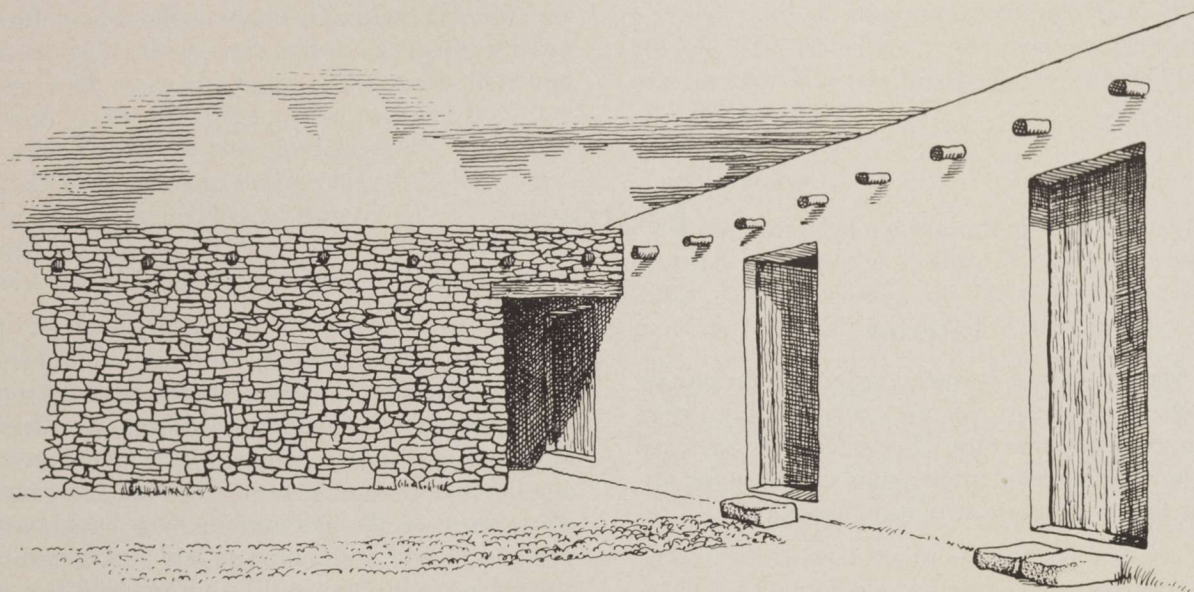


Fig. 26. Artist's reconstruction of northwest corner of quadrangle showing doorways (l. to r.) into Structures 13, 11, and 12. Looking northwest.

Features

Interior

Many types of features, reflecting various aspects of frontier Spanish colonial life, were found in the structures. These features are listed below and detailed information can be found under the appropriate structure descriptions.

Interior Features

<i>Feature type</i>	<i>Structure Numbers</i>
1. Prepared floors	1-2-3-5-7-9- 10-11-12-13
2. Wall plaster	2-4-5-10-11- 12-13
3. Roof debris	1-2-7-10-11- 12-13
4. Doorways	2-3-5-6-7-8-9- 10-11-12-13
5. Prepared thresholds	2-8-10-11
6. Door pivot	7
7. Hearths and ash basins	11-12-13-14
8. Hearths in fill	8-10
9. Burials	2
10. Charred corn	10
11. Lime concentration	10
12. Building material caches	4
13. Plugged hole in wall	13
14. Stone platforms	7
15. Adobe brick platform	10
16. Burned post	14
17. Postholes	8-10-14
18. Drainage trenches	8
19. Straw and manure	8
20. Large smooth rocks	12

Exterior

Adobe puddle pit

About 100 feet southwest of the bastion (Structure 7) there is a shallow, circular depression which is currently used for trash disposal. This basin is about 4 feet in depth at the present time and ranges from about 15 feet in diameter at the

bottom up to about 40 feet in diameter at its maximum extent. Modern trash disposal made it impossible to test this depression, but it is probable that it was a small, natural drainage which was developed into a puddle pit for manufacturing the thousands of adobe bricks used at the mission. Soil from the surrounding ridge could have been used and water and gravel were readily available in the Nueces River about 200 feet to the west. No other large depressions were found near the mission site.

Cobblestone walkways

Carefully prepared cobblestone pavements were found in three locations: outside the main entrance of the church (Structure 2), outside Structure 6, and outside Structure 12. Extending along the west wall of the church, and forming a walkway in front of the main portal, was a rectangular paved area about 27 feet long and 7 feet wide (Fig. 8). The smooth river cobbles used in this pavement ranged from about 8 to 15 cm. in diameter and were carefully placed to form a smooth, all-weather surface. The surface of this pavement was relatively flat and sloped downward slightly, away from the base of the wall. The cobblestone walks outside Structures 6 and 12 are described in the appropriate parts of the section on Structures.

Building materials concentrations

Various kinds of commonly used building materials were stockpiled within the mission compound. These concentrations are described under Structure 4.

Rock piles against wall foundations

Along the south part of the quadrangle, large smooth limestone slabs were stacked against the bases of adobe walls (Fig. 3). This technique was found outside the south wall of Structure 7 and both inside and outside the south quadrangle

wall. Stones one to two feet in diameter and four to six inches thick were laid in a strip about three feet wide along the bases of the walls. Dirt and small stones filled the spaces between the large rocks. These rock piles probably were used to fill shallow depressions and protect the adobe foundations from puddles of rain water. This south wall area was the only part of the compound which did not have good exterior drainage.

Limekiln

Lime was used in wall plaster in many of the structures and a concentration of lime was found on the floor of the granary (Structure 10). This lime was probably manufactured locally from the abundant limestone. The landowner of the north part of the site described a large, circular "oven" in the bank of the spring creek about 200 feet north of the north quadrangle wall. He said this oven was several feet in diameter and several feet deep, lined with adobe bricks, and

showed signs of intensive burning. This oven, which was quite likely the mission limekiln, was destroyed a few years ago by construction of a private road.

Trash middens

A large midden concentration surrounded the exterior wall of the bastion (Structure 7) in a broad, fan-shaped deposit. This debris extended out from the wall for 50 to 100 feet and was up to 1.0 and 1.5 feet in depth. This large mound of trash was undoubtedly thrown from the top of the bastion which offered easy access to a sturdy roof. A smaller concentration of midden debris surrounded the outside northwest corner of the quadrangle (Structure 11). This debris was probably thrown from the roofs of Structures 11, 12, and 13. The middens contained both Spanish and Indian artifacts plus large quantities of food bones, ashes, stones, and other debris.

The Artifacts

In classifying artifacts from a historic site it is difficult to decide between basic categories based on function (ornaments, tools, containers, etc.) and those based on material (glass, metal, shell, etc.). With these collections several complications are introduced into the classification process which are usually not found in prehistoric assemblages: (1) There are more functional categories and the exact source and function of many items cannot be determined. (2) There are frequently more types of materials used including such exotic things as semi-precious coral.

In a consistent classification, using basic functional categories, all ornaments would be described together, regardless of material (copper, glass, shell, etc.), but items whose functions are not known would form an unwieldy group. One who is interested in comparing artifacts to published descriptions for purposes of identification also finds functional categories difficult to use. For these reasons, the artifacts from San Lorenzo have been classified according to the material used for their manufacture—metal, ceramics, glass, stone, shell, bone. The only exception is found where coral, alabaster, and amber beads are described along with the glass beads.

Metal

Copper

A total of 54 copper alloy artifacts was found at the site of Mission San Lorenzo. Four of these are modern cartridge cases, calibres .22, .25, .30, .38, all of which were found on the surface. The remaining 50 artifacts, apparently all dating to the Spanish occupation of the site, are composed of copper alloys (brass, bronze) containing small amounts of zinc, tin, and other metals. Most of these artifacts are hand-wrought and some were probably made locally. They show hammer marks on one or both surfaces and various chisel

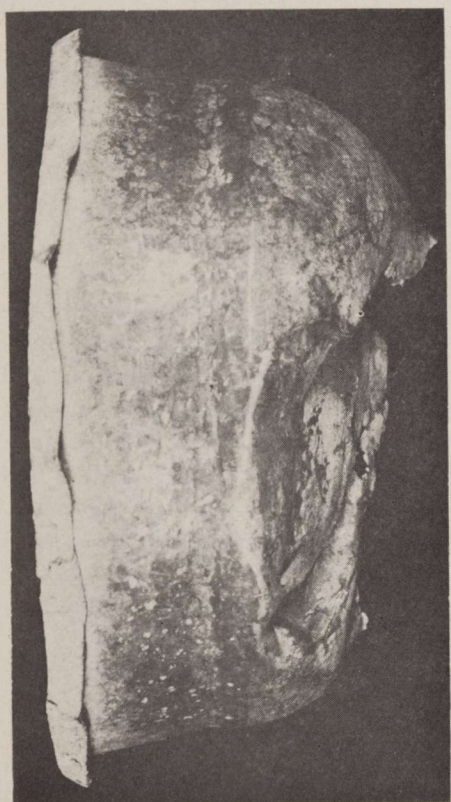
cuts and grinding striations. The thickness of the copper alloys used in these objects varies from 1 mm. to about 3 mm., with the entire range of thickness frequently occurring on one object. Some of the religious ornaments and the buckles were cast, and probably were made elsewhere. All of the copper objects were coated with patina ranging from thin and stable to thick and bubbly. Some objects were sufficiently cleaned simply by brushing and polishing with a soft cloth; others were cleaned chemically using techniques suggested by Plenderleith (1962: 232–257).

Vessels

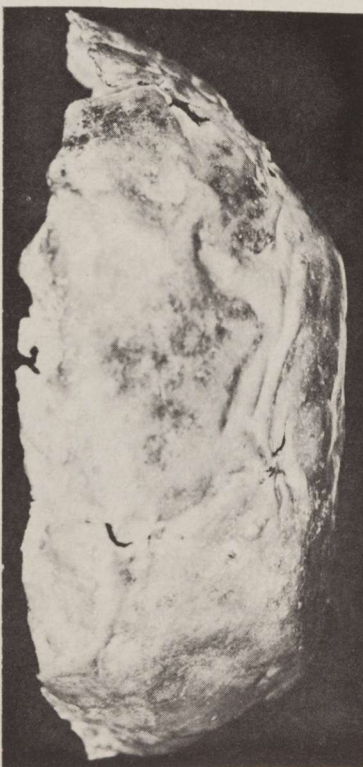
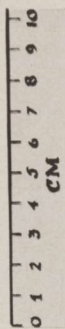
Three copper vessels and two fragments, probably from the same vessels, were found on the surface by local people while the south portion of the site was being bulldozed in the summer of 1962. These vessels, all heavily damaged by the machinery, were reportedly uncovered in the vicinity of the church (Structure 2). Possibly they were cached together in the raised sanctuary.

Vessel No. 1 (Fig. 27, A) is a deep bowl with a rounded base, a slight shoulder, and an everted lip. The original diameter was about 22 cm. and the depth about 13 cm. The neck of the vessel is about 4.5 cm. high and the lip is turned out and downward for about 1 cm. The original ragged edge of the lip is turned under and flattened against the under surface, leaving a rounded edge on the lip. Hammer marks show clearly on the exterior surface while the interior surface is coated with carbon and salts and pitted by corrosion.

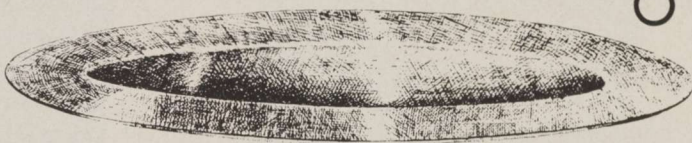
Vessel No. 2 (Fig. 27, B) is a shallow bowl with a rounded bottom and a serrated lip. The original diameter was about 22 cm. and the depth about 7.5 cm. The lip of this vessel is irregularly cut and unfinished (except for the serrations). It appears that the upper portion of the bowl may



A



B



C



Fig. 27. Copper vessels. A, deep bowl; B, bowl with notched rim; C, plate.

have been trimmed off. The shape and dimensions of this vessel are about the same as for Vessel No. 1, and it may be the lower portion of a similar vessel. The interior and exterior surfaces show some hammer marks and small striations. There is no deposit on the interior surface.

Vessel No. 3 (Fig. 27, C) is a shallow plate with a rounded bottom and a flattened rim. The diameter is 23 cm. The lip is cut and ground smooth, and two parallel lines are engraved around the plate just below the lip on the interior (upper) surface. These lines are about 3 mm. apart, with the first one about 1 mm. below the lip. This plate is well finished, showing very few hammer marks, with fine striations (from polishing?) and corrosion pits on both surfaces.

Two fragments of copper found on the surface in the vicinity of Structure 2 appear to be parts of the vessels described above. One fragment, 10 cm. in diameter, is heavily coated with salts and carbon on one surface and is probably part of the bottom of Vessel No. 1. The other fragment, 9 cm. across, appears to be part of the side portion of Vessel No. 2.

Patches

Four perforated copper fragments, two of which still have rivets in place, reflect the thrifty nature of the missionaries where copper was concerned.

A small copper patch (Fig. 28, B) is a square fragment, 5 cm. by 5 cm., cut out with clippers and perforated in each of the four corners. The corners are rounded, and the holes, about 5 mm. in diameter, were all punched from one side into an anvil or other such device. One hole is split out, and three still contain copper rivets. The rivets are rolled cylinders of sheet copper about 5 mm. in diameter, 1 to 2 cm. long, and flattened on both ends. Some tiny fragments of carbonized wood adhere to the rough side of the patch.

Another copper patch (Fig. 28, C) is trapezoidal in outline, 5.5 cm. wide, 9.8 cm. long on one side, and 4 cm. long on the other side. It was cut from sheet copper with clippers, and only one corner is rounded. It contains four holes, about 5 mm. in diameter, all punched from one side into an anvil or other such device. Three holes are spaced along the long side, one at each end and one in the center; the other hole is at one end of the short side. Distinct circular hammer marks appear on both surfaces.

A fragment of a copper vessel bottom has a large patch applied as described below. Apparently after the vessel was patched, its sides were lost; the bottom, including the patch, was subsequently cut in two with clippers. So the fragment remaining is half of a pot bottom with half of a hole covered with half of a patch. This fragment, 17.5 cm. long and 8.5 cm. wide, shows very well how large patches were applied to vessels: The hole in the bottom was cut smoothly with clippers to form a square with rounded corners. A large patch, about 5 cm. wider than the hole on each side, was placed inside the vessel and centered over the hole. Large rivets, about 5 mm. thick, were placed near each corner of the hole to hold the patch securely in place. Small rivets, 3 mm. in diameter, were spaced around the outside of the patch at 2 cm. intervals. All of the rivets were made by rolling cylinders of sheet copper and all of them are well flattened and smoothed on the inside and outside of the vessel. The rivet holes were all punched from the inside of the vessel outward. Two large rivets and nine small rivets are still in place in this patched fragment.

The other patch apparently was not completed. It is an irregularly shaped sheet of copper about 21 cm. by 11 cm. Two 6-millimeter perforations have been made near one edge, and this edge is folded over about 1 cm. and flattened against the sheet.

Strips and cylinders

Two rectangular strips of copper are about 3 mm. thick. The larger is 17 cm. by 2.4 cm., and the smaller is 5.5 cm. by 2 cm. The long edges of both fragments were cut with clippers, and the short ends were cut with a chisel. Both artifacts show circular hammer marks on both faces.

The other seven strips were cut from sheet copper about 1 mm. thick. All edges of these fragments were cut either by clippers or with a chisel. They range in width from 1.0 to 2.3 cm., and in length from 3.0 to 8.2 cm.

One of these fragments (1.0 by 4.0 cm.) is bent into a semicircle with both ends rolled inward. Two specimens have faint lines engraved on one face. A line is centrally located running

Fig. 28. Copper artifacts. A, heavily patched portion of pot bottom; B, patch with rivets in place; C, patch; D, strip.



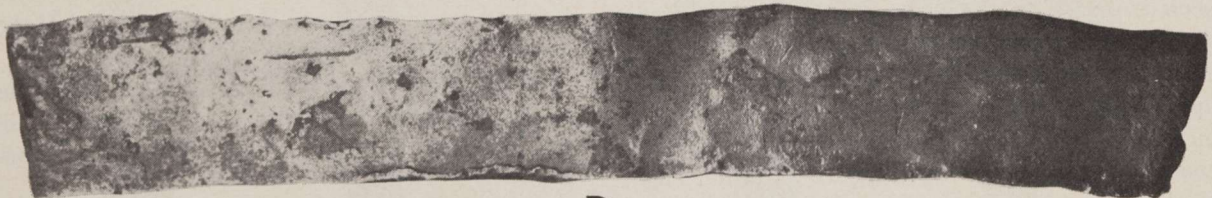
A



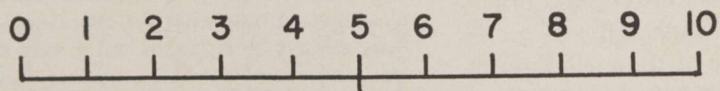
B



C



D



cm.

lengthwise on one, and the other has three parallel lines running lengthwise (one in the center of the face and one near each edge).

Four small cylindrical rolls of sheet copper were found. Two are made from copper about 3 mm. in thickness, and two are made from sheets about 1 mm. thick. The thick rolls were cut from sheet copper with a chisel. One of these is rolled into a complete cylinder, with only a slight overlap of the ends, 2.0 cm. long and 1.5 cm. in diameter. The other is incompletely rolled, but it is 2.0 cm. long and about 1.3 cm. in diameter.

The two thin copper cylinders were apparently made to serve a different purpose. One specimen was made by rolling in all the edges of a sheet of copper, then rolling the entire sheet into a heavily overlapped cylinder. This is probably a prepared but unused rivet. It is 2.5 cm. long and 1.5 cm. in diameter. The other specimen was made by rolling a sheet of copper into a cylinder and soldering the edges together so that the seam down the side of the cylinder is nearly invisible. This cylinder has one smoothly cut end and one broken end. Its dimensions are 3.7 cm. long and about 1.5 cm. in diameter.

Religious medals

Five brass or bronze religious objects, two medallions and three crucifixes, were found with burials beneath the floor of Structure 2. The under faces of these medals, as they lay in the ground, were heavily corroded, and it was necessary to clean them chemically to detect the designs.

Medallion No. 1 (Fig. 29, B) was found on the sternum of Burial No. 1. It had been strung with many small glass beads. This cast medallion is heavily worn on both faces, but some design details can still be determined. It was originally octagonal in outline, but the lower corners have been rounded by wear. Each face has a raised border around the edge and a raised religious design. The face showing the least wear, which was uppermost when it was found in the burial, depicts Christ on the cross with a tablet above His head and a weeping, robed figure on either side of the cross with their faces turned outward. *PASSIOCHRISTI* is spelled out around the medallion's border beginning at lower left; other letters are too worn to be deciphered.

The reverse, or down side of the medallion is heavily worn and only the faint outline of a

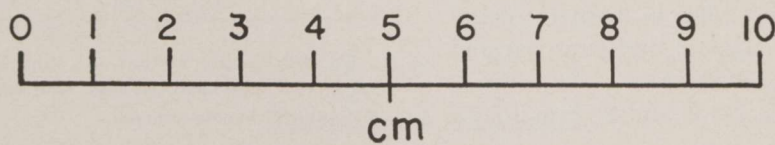
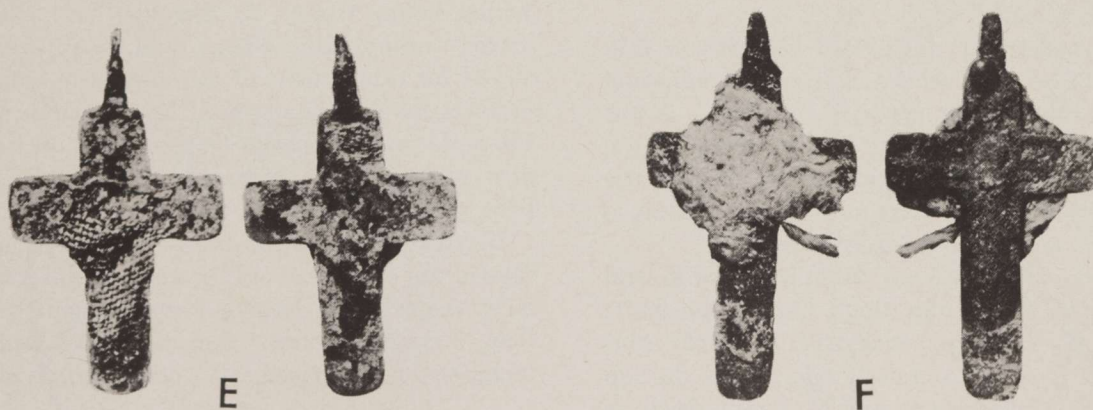
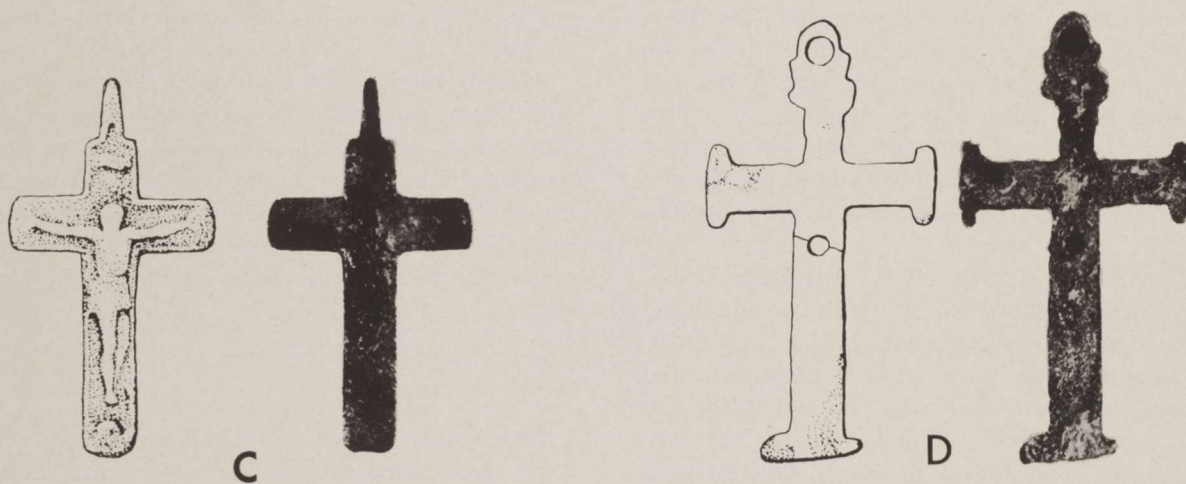
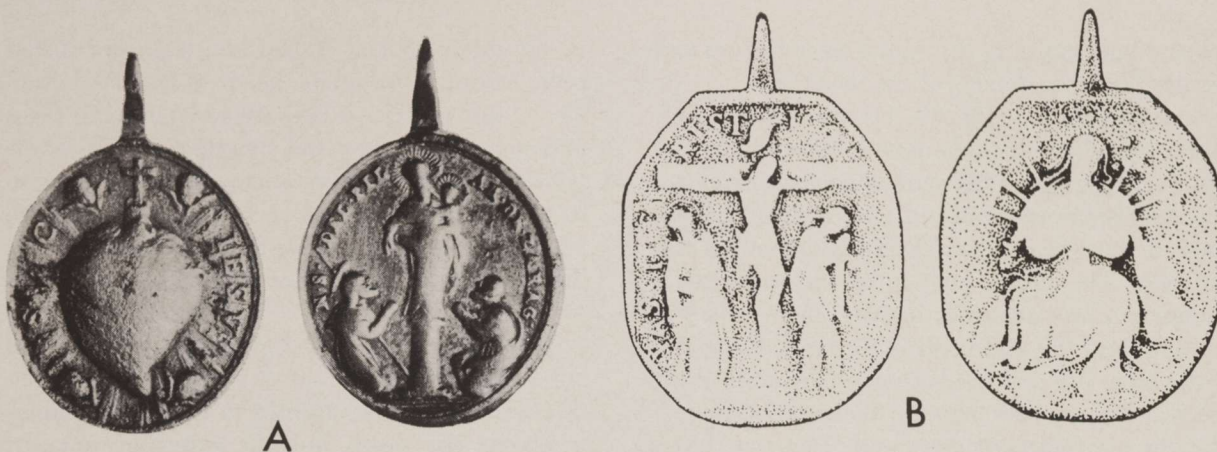
robed figure with long hair and with rays of light extending outward from the chest can be seen. This is probably a depiction of Christ kneeling with the "Sacred Heart" exposed and giving off light rays. The medallion is 4.5 cm. long, 3.7 cm. wide, and 4 mm. thick. A stem extends 1 cm. above the top of the medallion and is 6 mm. by 3 mm. thick with a 3 mm. suspension hole through it near the top. The suspension hole runs parallel to the wide axis of the medallion and is heavily worn by the thong which suspended the medal.

Medallion No. 2 (Fig. 29, A) was found near the sternum of Burial No. 10 (Fig. 9). It had been strung with an assortment of colored glass beads. This cast oval medallion is very well preserved, showing almost no wear on the raised border and religious designs on both faces. The face, which was turned downward in the burial, depicts a robed figure holding a child and standing on a pillar. Halos of light surround both heads. A kneeling figure in an attitude of prayer or adoration is shown on each side of the pedestal, and the one to the left is holding some sort of staff. Reading from the lower left, the following letters appear around the edge of the medallion: N.S. DEL. PIL AR. DE. ZARAG. This can be translated "Nuestra Senora del pilar de Zaragoza" or "Our Lady of the Pillar of Saragossa." This depicts the "Virgin Mary" as she appeared holding the Christ child on a pillar of jasper in Saragossa, Spain. Two saints (one is probably St. James) are witnessing the event (Aradi, 1954: 22-23).

The upturned side depicts a large "Sacred Heart" with a cross extending out of a severed artery on top. Two cherubs are hovering above the heart and two below, while numerous beams of light extend outward from the heart. To the left of the heart are the letters S. C., and to the right are the letters IESV. These may be translated "Sagrado Corazon Jesu" or "Sacred Heart Jesus."

Measurements are 2.6 cm. long, 2.4 cm. wide, 3 mm. thick; a stem extending 1 cm. above the top is 5 mm. by 2 mm. thick with a 2 mm. sus-

Fig. 29. Religious medallions and crucifixes. A, Medallion No. 1 from Burial 10; B, Medallion No. 2 from Burial 1; C, Crucifix No. 3 from Burial 8-1 after cleaning; D, Crucifix No. 1 from Burial 8-2; E, Crucifix No. 2 from Burial 4; F, Crucifix No. 3 from Burial 8-1 before cleaning, showing attached cloth and glass bead.



pension hole running through it near the top and parallel to the wide axis of the medallion.

Crucifix No. 1 (Fig. 29, D) was found associated with the distarticulated bones of Burial No. 8-2 (Fig. 9). This somewhat asymmetrical crucifix apparently was cut with a chisel from a piece of sheet brass, then carefully smoothed and polished. The upper portion of the main shaft widens out on both sides in two places near the top end, and the end itself is rounded. Each end of the cross bar and the bottom of the main shaft are widened on both edges at the end and have a straight or slightly convex end. The crucifix is 6 cm. long, 3 cm. wide, and 1 mm. thick. The shafts range from 5 to 7 mm. in width and the ends of the shafts extend to from 1 to 1.4 cm. in width. There are two smooth round perforations in this cross: one, for suspension, is 4 mm. in diameter near the top of the main shaft, the other, 3 mm. in diameter, is through the center of the main shaft just below the cross arm. When the crucifix was found, a tiny fragment of a thin leather thong was wrapped and tied securely through the suspension hole at the top. It had been preserved by its contact with the copper in the cross.

Crucifix No. 2 (Fig. 29, E) was found in the chest area of Burial No. 4. Strung with colored glass beads, it was a very thin, cast brass crucifix showing some wear on both faces. A raised border runs around all edges of both faces and both have a raised religious design. The face which was uppermost in the burial depicts Christ on the cross with a tablet over His head. His lower body is turned slightly to the left so that His right leg overlaps His left one. No lettering could be detected.

The reverse, or downward face has a thin layer of fine plain weave cloth of flax adhering to the lower portion. As with Crucifix 1, it was undoubtedly preserved by contact with copper. The face was not cleaned in order to preserve the cloth, but the upper part of what is probably a Madonna and Child design can be seen.

This crucifix is 2.5 cm. long, 2 cm. wide, and slightly less than 1 mm. thick. Each of the shafts of the cross is 6 mm. wide with a slightly convex end. A stem extends 7 mm. above the top of the crucifix and is 4 mm. by 2 mm. thick. A suspension hole about 1 mm. in diameter penetrates this shaft near the top and runs parallel to the wide axis of the crucifix.

Crucifix No. 3 (Fig. 29, C and F) was found

in the chest area of Burial No. 8-1, and it had been strung with glass beads. Like Medallion No. 1, this crucifix is heavily worn on both faces and shows faint diagonal striations where it was polished on an abrasive surface. This cross is so heavily worn that the ends of the crossbeam are actually quite sharp. Both faces of the cross originally had a raised border around all edges and a raised religious design.

The face which was uppermost in the burial depicts Christ on the cross with the lower part of His body turned slightly to the left. A tablet is above His head, but no lettering remains. There is a raised spot at the base of the cross beneath Christ's feet—probably a skull.

The reverse, or downward, face is not only heavily worn but also badly pitted by corrosion. A standing robed figure can be faintly discerned, and it probably is a "Madonna with Christ child" design.

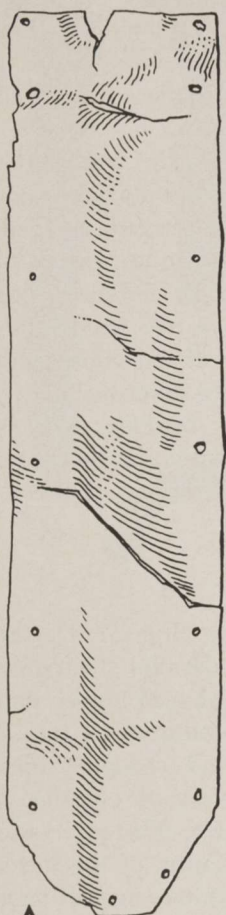
Measurements are 4.3 cm. long, 2.8 cm. wide, and 3 mm. thick. The shafts of the cross are 7 mm. wide and have convex ends. A stem extending 8 mm. above the top of the crucifix is 4 mm. by 3 mm. with a 2 mm. suspension hole running through it parallel with the wide axis of the cross. The hole is well worn by the suspension cord.

Overlays (Adornos)

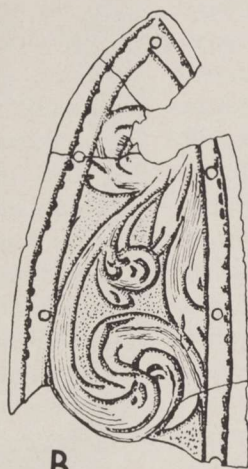
Nine sheet copper alloy overlays (Fig. 30, A-F) were found during the excavation. Three are undecorated, but the others all have chisel-cut and die-stamped scroll, leaf, and curvilinear designs on one face. All of them have small drilled holes, 1 mm. in diameter and evenly spaced around the edges, which apparently served for attachment of the objects to wooden surfaces by the use of small brass or iron pins. These decorations probably were used on furniture, storage chests, and perhaps gunstocks (Di-Peso, 1953: 199, and Fig. 23).

In outline, these decorations are quite variable. Two of the plain ones are incomplete and irregularly shaped. The larger of these, about 8 cm. long, 3 cm. wide, and 1 mm. thick, has four attachments holes spaced at 1.7 cm. intervals along

Fig. 30. Copper artifacts. A, strip with small attachment holes; B-F, decorated overlays with small attachment holes; G, buckle; H, handle from pot.



A



B



C



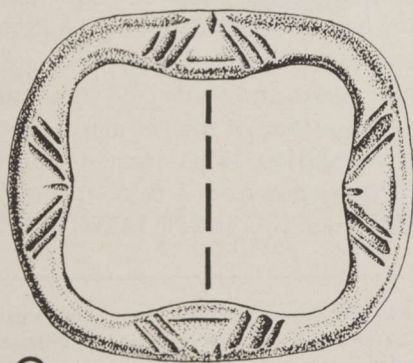
D



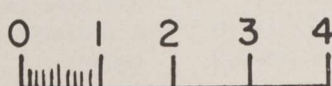
E



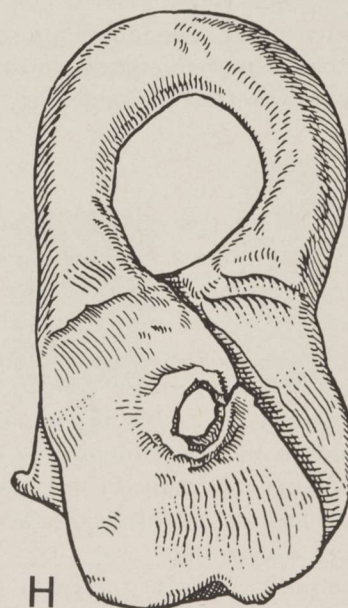
F



G



cm



H

one edge, and about 2 mm. back from the edge. The smaller one is about 4 cm. across (maximum) and 1 mm. thick. It has three attachment holes along one edge at 1 cm. intervals and 1 mm. from the edge. The complete specimen (Fig. 30, A) is in the shape of a long rectangle with the two corners on one end clipped off. It is 11.6 cm. long, 2.8 cm. wide and 1 mm. thick with 14 attachment holes spaced around the edges at intervals of from 8 mm. to 2.4 cm. and about 4 mm. back from the edge. One face of this decoration is quite smooth and shows faint polishing striations.

The other six specimens each have one face decorated with die-stamped designs. Design elements used include leaves and scrolls, semicircles, enclosed areas which are cross-hatched or punctate-roughened, rows of short curved lines spaced perpendicularly along edges, and other curvilinear patterns (Fig. 30, B-F). In outline, two specimens are wing-like with scalloped edges, two are leaf-shaped with dentate edges, one is rectangular with notched edges, and one is lanceolate with smooth edges. All have attachment holes, about 1 mm. in diameter, spaced around the edges at intervals of from 6 mm. to 2 cm. All of the specimens have a uniform thickness of about 1 mm.

The rectangular decoration (Fig. 30, C) mentioned above has a smooth hole 8 mm. in diameter situated in the center of the specimen. Wear marks on one face surrounding this central hole indicate that this specimen probably was a decorative shield around the base of a small door knob or drawer pull. The lanceolate specimen has a 7 mm. hole centered laterally toward one end, and it probably served the same purpose.

Buckles

Four fragments of ornamental buckles (Fig. 30, G) were found in the ruins of Mission San Lorenzo. All are made of brass or bronze and decorated on the upper surface only. These mold-made buckles are rectangular in overall outline, concave-convex (with only the convex side decorated), with thickened areas in the center of both sides. Cross-bar holes, about 1 mm. in diameter, are drilled completely through the thickened areas on the sides. No cross-bars or tongues were found.

The only complete specimen (Fig. 30, G) is 5.3 cm. long, 4.6 cm. wide, 2 mm. thick (except

in the thickened areas on the sides). It has a filed-on design, clearly showing the file striations, consisting of chevrons and parallel straight lines. The end piece of an identical specimen also was found.

One of the other buckle fragments has a simple molded dentate ridge along one edge. The other fragment has a very ornate molded design consisting of scrolls, curls, floral elements which are emphasized by notched edges, and cut-out areas. These last two fragments apparently represent buckles of the same general size as the complete specimen described above.

Light weight, fancy buckles such as these were used for ornamentation on shoes and clothing in the eighteenth century (DiPeso, 1953: 203).

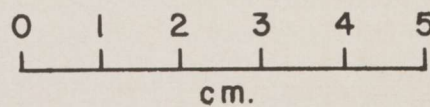
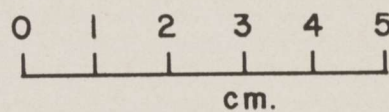
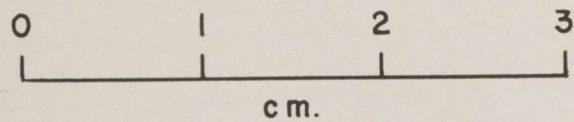
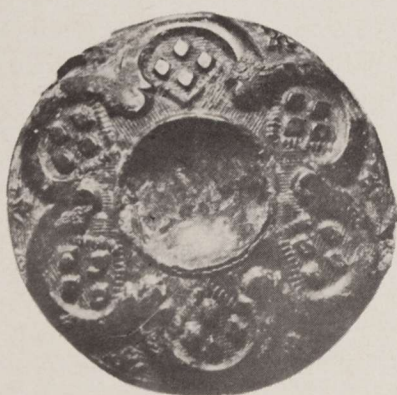
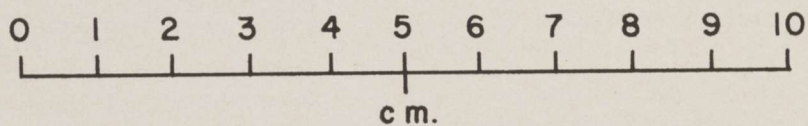
Thimble

A small brass thimble (Fig. 31, I) was found at the site. It has fine parallel striations on the inside. It has a dome-shaped upper end decorated with a grid of indentations 1 mm. square, a distinct shoulder, and straight sides decorated with diagonal rows of circular punctations 1 mm. in diameter. The punctations extend down to within 3 mm. of the lower edge. The exterior dimensions are: overall length, 1.8 cm.; length of walls, 1.5 cm.; width at top, 1.3 cm.; width at bottom, 1.7 cm.; wall thickness, 1 mm.

Hawk bell

This tiny bell (Fig. 31, H) is made from two thin, sheet-brass hemispheres whose edges are soldered flush together forming a smooth joint around the center of the bell. Two faint parallel lines with ticked edges encircle each hemisphere about 1 mm. from the soldered joint and are spaced about 1 mm. apart. The lower half of the bell has two perforations, 4 mm. in diameter, spaced 9 mm. apart and connected by a narrow slit. The upper portion of the bell has a part of a thin brass suspension loop situated centrally. This loop is fashioned from a thin strip of brass 1 mm. wide which was inserted through a hole

Fig. 31. Iron and copper artifacts. A-E, hand-forged iron nails; F, portion of mouth and side piece of iron bridle bit; G, brass button; H, two views of brass hawk bell; I, brass thimble; J, unidentified copper strip; K, unused rivet made from sheet copper.



in the hemisphere and fixed in place by a drop of silver colored solder. Inside the bell are some badly rusted iron pellets. The exterior surface of the hawk bell has faint parallel striations and ridges forming concentric circles extending from the median seam to the apex of each hemisphere. These striations appear to have resulted from the manufacturing process used in shaping the bell. This specimen is 1.7 cm. in diameter, 1.3 cm. thick (top to bottom), and it is made from sheet brass less than 1 mm. thick.

Button

Only one copper alloy button was found. It is made of very thin (less than 1 mm.) sheet brass stamped into a mold which formed a very complex raised design on the outer face (Fig. 31, G). This brass shell was mounted on a wooden backing (partially preserved) by folding under the outer edge and thereby forming a flange about 2 mm. wide around the circumference of the rear

face. In the center of the outer face of the button is a circular depression 8 mm. in diameter and about 2 mm. in depth. A crushed green glass set of about this same size, found very near the button, probably was glued to the front of the button at one time. The outer surface of this button, although patinated, retains a very high degree of polish. The button is 2.2 cm. in diameter and 4 mm. thick.

Loop handle

A copper loop (Fig. 30, H) which probably served as a heavy pot handle, was formed in the following manner: (1) Both ends of a copper bar about 17 cm. long and 1.3 cm. in diameter were hammered to a thickness of about 2 mm. for a distance of about 4 cm. (2) The bar was then bent in the center to form a circular loop with an inside diameter of about 2 cm. (3) The overlapping flattened ends were hammered together. (4) A rivet hole 7 mm. in diameter was

Fig. 32. Provenience of copper artifacts.

	Vessels & frags.	Patches	Strips	Rolls	Religious objects	Rivets	Perforated overlays	Buckles	Thimble	Hawk bell	Loop handle	Button	Modern cartridges	Total
Structure 1														
floor	--	--	--	--	--	--	1	--	--	--	--	--	--	1
Structure 2														
burials	--	--	--	--	5	--	--	--	--	--	--	--	--	5
outside	--	--	--	--	--	--	1	--	--	--	--	--	--	1
Structure 4														
fill	--	--	--	--	--	--	--	--	--	--	--	1	--	1
Structure 7														
fill	--	1	1	1	--	--	--	--	--	--	--	--	--	3
floor	--	--	--	2	--	--	--	--	--	--	--	--	--	2
Structure 8														
floor	--	1	--	--	--	--	1	--	--	--	--	--	--	2
Structure 10														
fill	--	--	--	--	--	--	--	1	--	--	--	--	--	1
Structure 11														
fill	--	--	--	--	--	--	--	1	--	--	--	--	--	1
Structure 12														
floor	--	--	2	--	--	--	--	--	--	--	--	--	--	2
Structure 13														
floor	--	--	--	1	--	1	1	1	--	--	--	--	--	4
Structure 14														
fill	--	1	--	--	--	1	--	--	--	--	--	--	--	2
floor	--	--	2	--	--	--	1	--	--	--	--	--	--	3
Midden	--	--	--	--	--	4	1	--	--	1	--	--	--	6
W. Wall Area	--	1	1	--	--	--	1	--	--	--	--	--	--	3
Surface	5	--	3	--	--	--	2	1	1	--	1	--	4	17
Total	5	4	9	4	5	6	9	4	1	1	1	1	4	54

punched through the center of the flattened area from one side. The overall dimensions of the completed loop are 7.8 cm. long and 4.2 cm. wide.

Rivets

Six copper rivets and rivet fragments, all heavily corroded, were recovered. One specimen made from a rounded bar 5 mm. in diameter has a shaft length of 1 cm. and a flattened end 1.7 cm. in diameter. Another specimen made from rolled sheet copper has the following dimensions: shaft diameter, 5 mm.; shaft length, 5 mm.; diameter of flattened end, 1 cm. All other specimens are too fragmentary for description.

Iron

A total of 177 iron artifacts was found during the excavation of the site. Eighty-four are considered to be of Spanish origin either because of direct association with the mission structures or because of the technique of manufacture. The mission iron is heavily oxidized. It could not be chemically cleaned because only a thin and discontinuous core of iron remained in many objects. All of these artifacts were mechanically cleaned and coated with a preservative. Some show signs of having been shaped by hammer, chisel, and punch, but the technique of manufacture of many of the objects cannot be determined.

The other 93 iron objects were found either on the surface or in the fill of the structures and probably date to old Camp Wood and subsequent occupations of the site. These objects, including tin can fragments, harness buckle, button, machine-cut round and square nails, horseshoes, and a padlock, are less oxidized than the mission iron. Although they are not described in detail their provenience is shown in Fig. 36.

Ladle

This ladle (Fig. 33, C) has a round, shallow bowl and a short (probably broken) handle which is rectangular in cross section. Found on the floor of Structure 13, it may have been used to handle molten lead in the manufacture of lead balls for muskets. The bowl is 7.5 cm. across, 2.0 cm. deep, and 4 mm. thick. The handle is 7.7 cm. long, 1.8 cm. wide, and 1.1 cm. thick.

Ladle handle

A long thin iron bar, circular in cross section, has a flattened area at one end which apparently was attached to a shallow bowl. It is 16.6 cm. long and about 8 mm. in average diameter; the flattened end is 2.0 cm. across and 2 mm. thick.

Bridle bit fragments

Five fragments (Fig. 31, F) of a heavy iron bridle bit were found. These included the distal and adjacent ends of a cheekpiece, part of a mouthpiece, a ring for attaching the bit to the headstall, and part of an ornamental chin piece. These scraps, too fragmentary to furnish meaningful measurements, compare closely with an early Spanish ring bit in the collections of the Texas Memorial Museum and with ring bit fragments from many other early historic sites in Texas.

Buckle fragments

Hand-wrought iron buckles were made in the following manner: (1) Small iron rods, about 5 mm. in diameter, were folded and twisted into loose spirals. (2) The spirals were flattened by hammering to form short, twisted bars with flattened loops at each end. (3) Four of these bars were arranged into a rectangular shape with the loop ends overlapping. (4) The ends of the bars were riveted together forming a rectangular iron buckle showing the woven or twisted pattern on all its sides—molded brass and iron buckles of the same period sometimes were decorated with a woven or twisted design reminiscent of these hand-wrought buckles. (5) A cross bar was inserted in small holes, about 2 mm. in diameter, which penetrated the centers of the side bars.

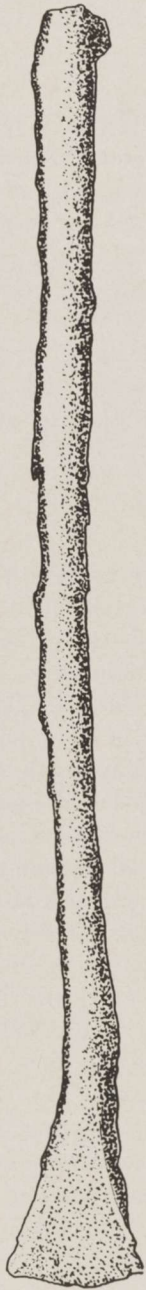
Only three fragments were found (Fig. 34, E). These are all parts of side bars showing the lateral perforation for the cross bar. If complete, each side piece would have measured about 8 cm. long, 1 cm. wide, and from 2 mm. thick at the ends to 6 mm. thick at the center.

Anquera jingler or fica

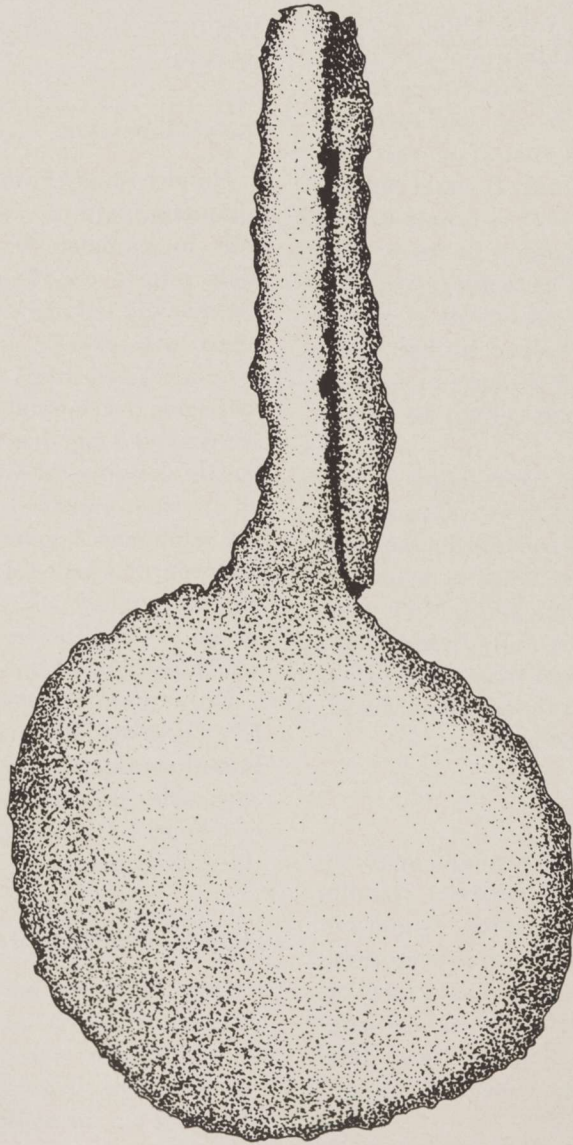
One jingler for horse trappings is made from a short bar of iron about 6 mm. in diameter. One end of the bar was bent around to form a suspension loop. The other end was flattened to about 1.2 cm. in width and the flattened end was



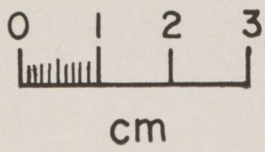
A



B



C



lightly notched. This formed a stylized hand symbol or *fica* commonly used on horse trappings as decoration and as a charm to ward off the "evil eye."

Sash hook for small firearm (Fig. 34, B)

This smooth iron hook is broken at the base, where it was attached to the side of the gun stock. It is 8.5 cm. long, 9 mm. wide, and 5 mm. thick. It extended out from the gun stock about 1.3 cm. and ran parallel to it for a distance of about 8 cm. It was used to clip a small firearm to a waist-band or sash.

Trigger guard fragment (Fig. 35, A)

This is a badly rusted fragment, about 3.5 cm. long from the end of a trigger guard. It is about 3 mm. thick with smooth outer surface, beveled edges, rounded end, and an attachment loop on the center of the inner face about 1 cm. from the rounded end. The loop was inserted into the stock and fixed into place by a pin. It is about 1 cm. wide, 1 cm. long, 4 mm. thick, and forms a hole about 2 mm. in diameter.

Gun worm or bullet worm

Apparently this artifact (Fig. 34, A) was mounted on a long wooden rod and used for clearing the barrel of a firearm. The basal end is a round hollow tube where the wooden rod was inserted. The other end, hammered into a solid piece, is twisted into a long spiral with a sharp tip. The corkscrew end is 3 cm. long, overall length is 8 cm., and the diameter tapers from 9 mm. at the hollow base to 6 mm. at the tip.

Knife blade

This is a fragment of the handle-end of a small knife (Fig. 35, E) made of one piece of hammered iron. Only about 1.5 cm. of the blade remains. It is 2.6 cm. wide and a maximum of 4 mm. in thickness. A flange about 3 mm. thick and 1.5 cm. in diameter separates the blade from the tang, which is 7 cm. long, square in cross section, and tapers from a thickness of 8 mm. at the flange down to a dull point.

Rapier hilt quard (Fig. 35, C)

A thickened area in the middle of this sturdy iron cross piece has a depression on one side to receive the base of the blade and a hole 9 mm. across, through which the tang passed. The base of the blade was about 2.2 cm. wide and 7 mm. thick. One end of the cross bar is split into three parts, with two curving quillons ending in rounded balls and a flattened arm with a rivet hole for attachment to one side of a cup guard. The diameter of the cup would have been about 10.5 cm. The quillons are about 5.5 cm. long and 8 mm. in diameter, and the ball ends are 1.3 cm. in diameter. The maximum width of the cross piece, at the point where the tang went through is 1.8 cm.

Scissors

Half of a pair of scissors was found (Fig. 35, D). This implement has a long, triangular blade with a sharp point, straight back, and a curved cutting edge. An attachment hole, 2 mm. in diameter, is situated centrally near the base of the cutting blade. The handle, square in cross section and about 5 mm. thick, ends in a circular finger loop with an inside diameter of about 2 cm. The overall length of this scissors half is 12 cm. The blade is 7 cm. long, 1.5 cm. wide at the base, and about 3 mm. in average thickness.

Nails

Twenty-four relatively complete hand-wrought nails were collected from in and around the mission structures (Fig. 31, A-E). The shafts are roughly squared and taper slightly from the head to the point end. The heads are flattened, ovoid in outline, and usually not centered on the shaft. One extra long specimen has a very thick, many-faceted head. The nails range in length from about 4.5 cm. to 12.5 cm., the shaft thickness varies from about 3 mm. to 8 mm. The heads are from 1 cm. to 2.2 cm. in diameter and average about 4 mm. in thickness.

Many of these nails appear to have been driven through boards, had the tip end curled over, and then all of the exposed shaft bent over and brad-ded down so that the tip was reinserted into the back surface of the wood. The thickness of the joined material reflected by these bent nails varies from 3.0 cm. to 4.9 cm.

Fig. 33. Iron artifacts. A, unidentified iron disc; B, ladle handle; C, heavily rusted ladle.

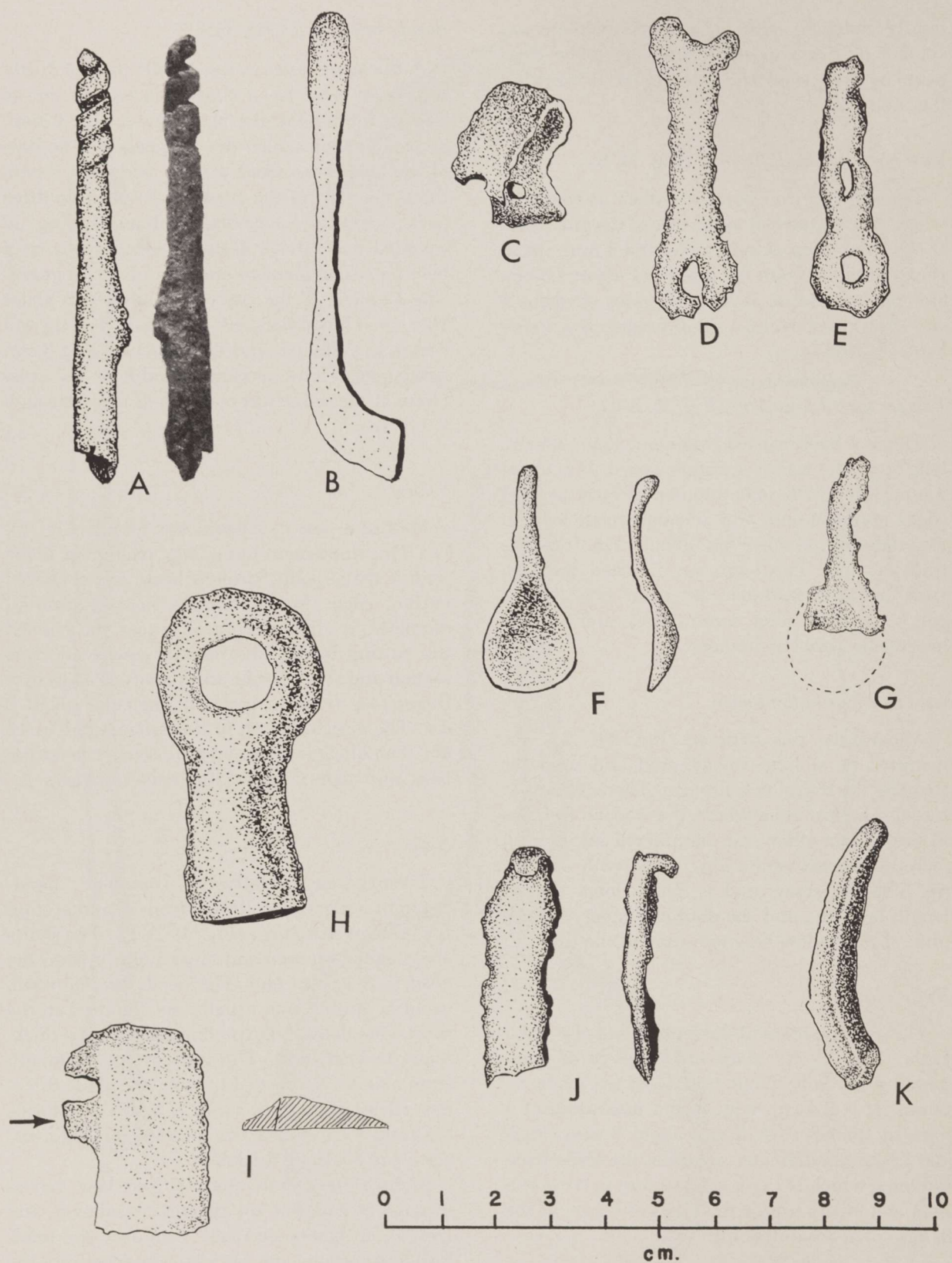


Fig. 34. Iron artifacts. A, end of bullet worm; B, sash clip for small firearm; C and D, unidentified; E, buckle fragment; F-K, unidentified.

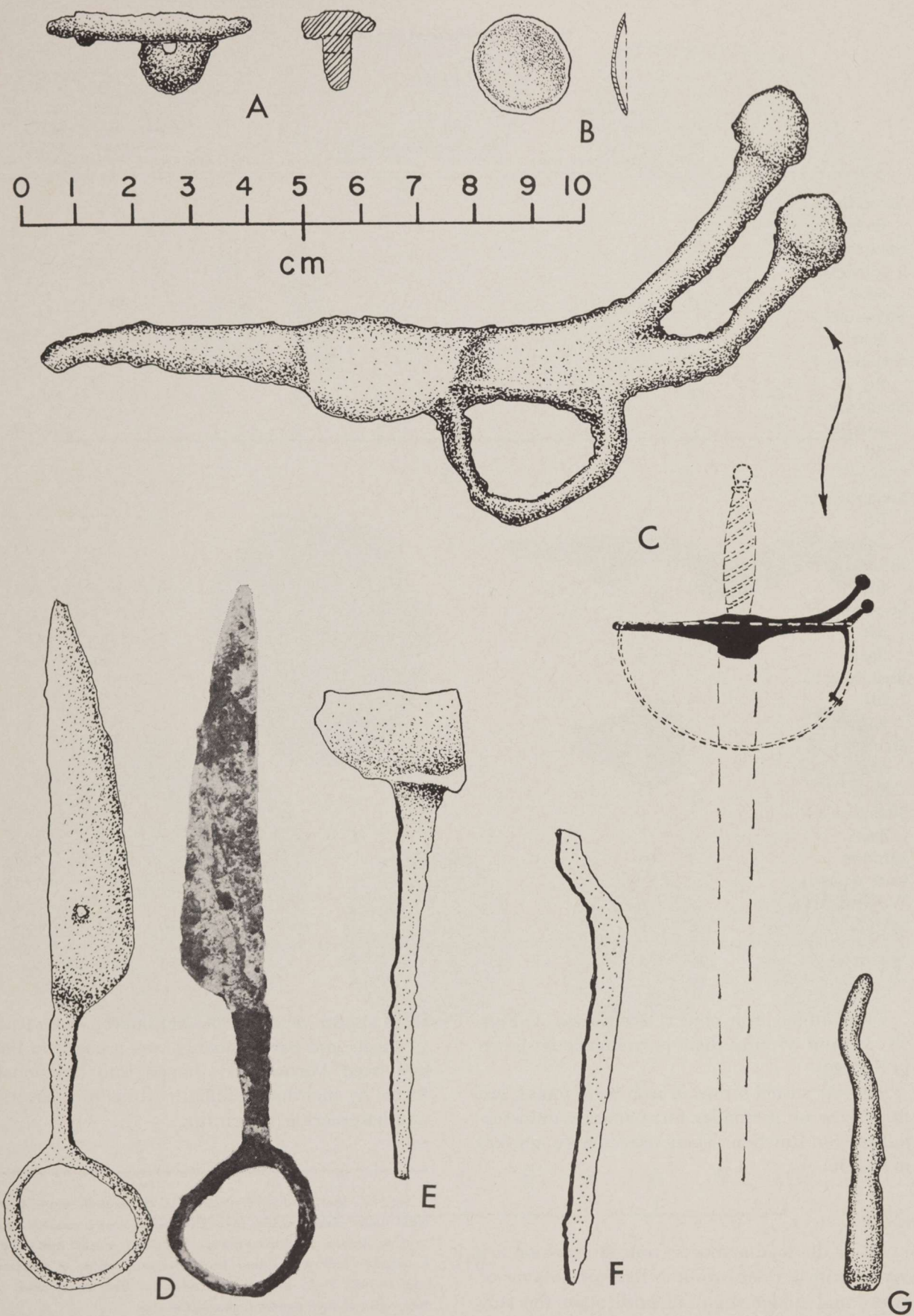


Fig. 35. Iron artifacts. A, end of musket side plate; B, unidentified small disc; C, hand guard for sword handle; D, scissors; E, knife handle; F, G, unidentified.

Fig. 36. Provenience of iron objects.

	Probably Spanish											Ma-	Ma-	Miscel-	Totals
	Hand-made nails	Uniden-tified iron lumps	Uniden-tified iron objects	Knife	Gun worm	Bit frag-ment	Pronged object	Disc, lunate	Scissor	Ladle handle	Ladle	chine-made square nails	Recent chine-made round nails	laneous recent iron objects	
Structure 1															
floor	4	..	1	..	..	..	..	..	..	..	..	..	..	..	5
Structure 2															
outside	..	..	..	..	..	..	..	..	..	..	..	8	..	..	8
floor	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Structure 3															
floor	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Structure 4															
fill	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Structure 7															
outside	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
fill	1	..	5	..	..	..	..	..	..	..	..	9	1	..	16
floor	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Structure 8															
fill	..	1	..	..	..	..	..	..	..	..	..	1	..	..	2
floor	..	..	3	..	..	1	1	..	..	..	..	..	..	..	5
Structure 10															
fill	..	..	..	..	..	..	..	..	..	..	..	5	..	7	12
Structure 11															
fill	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
floor	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
Structure 12															
fill	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
floor	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Structure 13															
fill	..	..	3	..	..	..	..	..	..	..	..	1?	1?	..	5
floor	..	5	5	..	..	..	..	..	..	..	1	..	..	..	11
Structure 14															
floor	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Midden	1	16	7	..	..	..	..	..	..	..	..	..	..	..	24
Gate Area	..	..	..	..	..	..	..	..	..	..	..	11	1	..	12
W. Wall Area	..	..	1	..	..	..	..	..	..	1	..	..	..	..	2
Surface	5	1	8	1	..	..	..	..	1	..	..	30	6	12	64
Totals	19	24	33	1	1	1	1	1	1	1	1	65	9	19	177

Unidentified iron objects are shown in Figs. 33, 34, and 35, and their provenience is shown in Fig. 36.

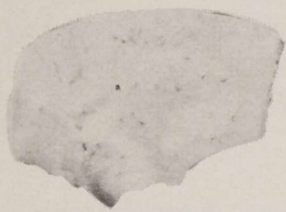
Heavily rusted scraps of iron were found, but they show no particular form and are unidentifiable as to function. Their provenience appears in Fig. 36.

Lead

All of the lead artifacts from the mission are coated with a thick white to light gray layer of oxide, and under slight magnification the sur-

faces appear very uneven and bubbly. Bulk lead in sheets and bars probably was brought to the site from Mexico and shaped into functional forms by melting/molding, cutting with shears, and hammering/imprinting.

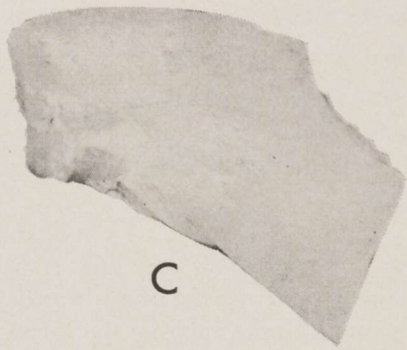
Fig. 37. Shell and lead artifacts. A-C, scrapers made from fresh water mussel shells; D, button made from a circular lead seal; E, clipped lead sprue from a three-shot musket ball mold; F, musket ball with sprue from one-shot mold; G, clipped musket ball; H-K, circular lead discs cut from sheet lead; L, two views of shell pendant, shown full size.



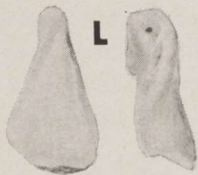
A



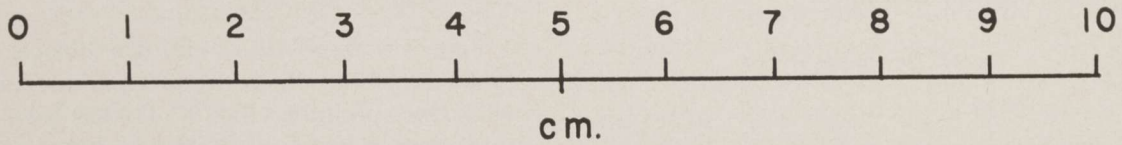
B



C



L



D



E



F



G



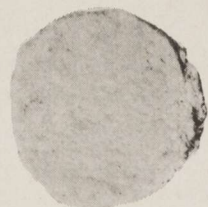
H



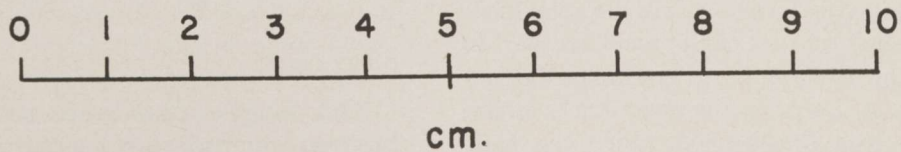
I



J



K



Musket Balls

Number 1 (Fig. 37, G) is a complete ball with no impact facets. It is spherical with faint mold marks and a small nipple opposite the sprue scar. Its diameter is 1.3 cm. and its weight 10 grams.

Number 2 (Fig. 37, F) is a misshapen ball with the sprue still attached. It was made in a one-ball mold and the marks show clearly. There is a small nipple opposite the sprue. Its diameter is 1.3 cm. and its weight including the sprue is 10 grams. The sprue is 6 mm. wide, 1 mm. thick, and 7 mm. long, with a small round drop of lead on the end opposite the ball.

Fig. 38. Provenience of lead.

	Musket balls	Sprues	Ring	Discs	Sheet	Scraps
Structure 7						
fill	1	--	--	--	--	--
Structure 8						
floor	--	1	--	2	--	--
Structure 10						
fill	1	--	--	--	--	--
Structure 11						
fill	--	--	--	--	1	--
floor	--	--	--	1	--	--
Structure 12						
floor	--	1	--	--	--	1
Structure 14						
floor	--	--	1	--	--	--
Midden	--	--	--	1	--	3
Surface	1	--	--	6	--	2
Total	3	2	1	10	1	6

Number 3 is badly misshapen from impact. No marks are visible on the surface and its diameter cannot be estimated. Its weight is about 4 grams.

Sprues

These are the excess lead strips cast on the outside of a three-ball bold (Fig. 37, E). Both specimens came from the same mold or nearly identical musket ball molds. The three musket balls were clipped from each specimen with shears. The lead shafts which were cast in the holes leading into the ball cavities of the mold are oval in shape and the two halves of the mold did not meet evenly, as shown by the mold marks on the sprues. The lead shafts from which the balls were clipped are 7 mm. by 5 mm. and from 5 to 7 mm. in length. They are evenly spaced at 2

cm. intervals (measured from center of shaft to center of shaft). One specimen weighs 8 grams and the other weighs 12 grams.

Ring

This molded specimen is fragmentary with about 75 per cent of the original circumference present. It is a band of lead 7 mm. wide and 2 mm. thick in the form of a ring with an exterior diameter of 1.8 cm. There were two rectangular cutouts through the band, but their original sizes cannot be determined.

Discs (Fig. 37, D, H-K)

Four of these thin, circular objects were molded and the others were cut from sheets of lead. One specimen (Fig. 37, D) has been made into a button by having two small holes punched through the central area. The holes are 2 mm. in diameter and 5 mm. apart. On one surface is an impressed design consisting of a shield with a coat of arms, above which are plumes and banners. Details of the design cannot be determined due to wear and oxidation, but the specimen probably is a lead seal which was converted to a button because of its fancy design.

Two other specimens have very faint traces of impressed designs on one face. These discs are apparently all single components of lead with no evidence of protuberances from the faces or edges. Their function is uncertain, but some may have served as lead seals with impressed designs and others may have been weights for use with a balance.

Dimensions (cm.):	Diameter	Thickness	Weight (grams)
	1.3	0.15	1.2
	2.3	0.6	19.2
	2.2	0.4	12.8
	2.3	0.4	14.6
	2.9	0.4	23.8
	2.8	0.5	28.7
	2.4	0.4	13.1
	4.0 (button)	0.2	15.1
	3.8	0.1	10.8
	4.8	0.7	106.5

Sheet Lead

This roughly diamond-shaped sheet of lead has been cut with shears on all four edges. The surfaces are smooth except for heavy oxidation and the thickness is uniform. This specimen is

probably part of a large sheet of bulk lead. Its dimensions are: long axis, 13.5 cm.; short axis, 7.1 cm.; thickness, 2 mm.

Scraps

Six small amorphous lumps of lead probably were formed from spilled or discarded lead during the molding of musket balls. They range in weight from 1.1 grams to 17.8 grams.

Ceramics

The ceramic sample recovered from Mission San Lorenzo, although relatively small in quantity, is varied in nature and gives a good cross section of the pottery types in use on the northeastern frontier of New Spain in a restricted period from 1762 to 1771. The majority of the 3,482 sherds collected are of a plain, lead-glazed, utility ware which probably originated within a few hundred miles of San Lorenzo at one of the more permanent frontier settlements. The second most common type is tin-enameled earthenware. Its abundance reflects the temporal position of the site before the great florescence of English and American hard-paste earthenwares, and the geographical location of the mission within the distributional shadow of Puebla, Mexico, with its fine array of majolica. Among the decorated sherds are some from areas far removed from San Lorenzo, such as England and the orient. Even this poor mission, one of the smallest and most remote of outposts, benefited from the world wide trade network of eighteenth century Spain. Good quality ceramics in the New World tradition also were present and appreciated at San Lorenzo as reflected by the Indian-made wares from Central Mexico represented among the 201 non-wheel-made sherds.

The 3,482 sherds recovered during the excavation represent only a small fraction of the total sherds present in the site. More than half of the collected sherds (1,789) came from a test ten feet square in the primary mission midden. This midden averaged about 1 foot in depth and covered at least 5,000 square feet. These figures indicate a possible sherd content of about 90,000 pieces in the primary midden, to which number would have to be added the sherds contained in the structures, excavated and unexcavated, and in the midden along the north wall, which was as rich as the primary midden but of unknown ex-

tent. One implication of this sherd abundance is that similar Spanish outposts of an even more temporary nature—and there are many in Texas which have not yet been located—should have a scattering of distinctive sherds to mark their location permanently.

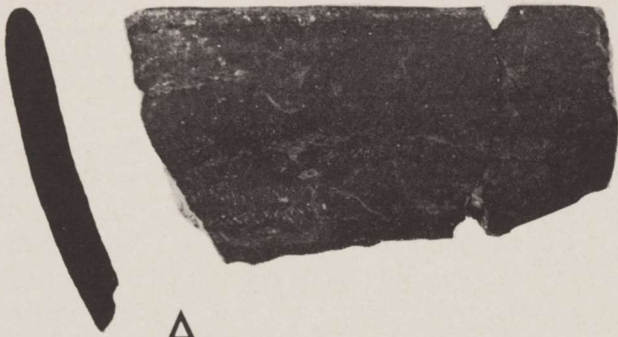
In the descriptions which follow, the ceramics are divided into three basic groups, *Earthenware*, *Stoneware*, and *Porcelain*, on the bases of porosity and hardness of the paste. The earthenwares, composing more than 99 per cent of the sample, range from 1.5 to 6.0 (Mohs' scale) in paste hardness, and have clearly distinguishable unfused grains in the paste. The stonewares have a paste hardness of about 6.5, and the paste grains are partially fused and inseparable. The porcelain sherds are near 7.0 in hardness and the paste is vitrified and translucent. A technique for determining the exact porosity of earthenwares, stonewares, and porcelains is described by Norton (1956), but the samples of each of these wares from San Lorenzo were discrete and could be separated readily by microscopic examination and hardness tests.

The earthenwares have been further divided into soft-paste wares with a paste hardness between 1.5 and 5.0 on Mohs' scale and hard-paste wares whose paste is between 5.0 and 6.0 in hardness. Included under the soft-paste earthenware are the non-wheel-made Indian ceramics, the wheel-made utility pottery, and tin-enameled sherds. The hard-paste earthenware includes ceramics which have been variously called semi-porcelain, ironstone, chinaware, edgedware, and other names.

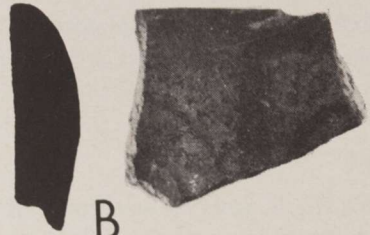
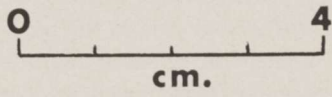
Within the larger groupings, the sherds are further segregated on the basis of such attributes as paste composition and inclusions, type of glaze, color of glaze, surface finish, type of decoration and color of enamel.

The following outline is furnished to help guide the reader through the section on ceramics.

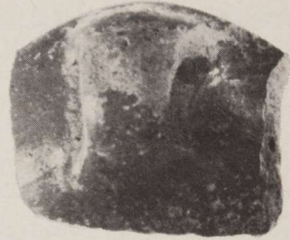
- I. Earthenware
 - A. Soft Paste
 - 1. Non-wheel-made
 - a. Polychrome polished ware
 - b. Dark red polished ware
 - c. Red polished and decorated ware
 - d. Red slipped plainware
 - e. Dark gray plainware
 - f. Miscellaneous non-wheel-made sherds



A



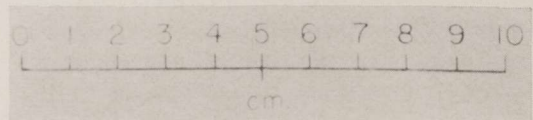
B



C



D



2. Wheel-made
 - a. Unglazed, red slipped plainware
 - b. Lead-glazed
 - (1) Amber glaze
 - (a) Plainware
 - (b) Noded ware
 - (2) Clear glaze, brown painted ware
 - (3) Green glaze, olive jars
 - (4) Miscellaneous lead-glazed sherds
 - c. Tin-enameled
 - (1) Glossy white, majolica
 - (2) Dull white
 - d. Unidentified glaze, dark brown appliqué ware
- B. Hard Paste
 1. Clear-glazed, white
 2. Clear-glazed, blue feather-edge
 3. Clear-glazed, polychrome painted
- II. Stoneware
 - A. Salt-glazed, white
 - B. Salt-glazed, brown
 - C. Salt-glazed, blue
- III. Porcelain
 - A. American porcelain
 - B. Oriental porcelain
- IV. Ceramic Discs
- V. Ceramic Scrapers
- VI. Plastered Sherds

Earthenware

SOFT-PASTE, NON-WHEEL-MADE

POLYCHROME POLISHED WARE

(Fig. 40, F, G), 10 sherds

Published descriptions of a comparable ware have not been found, but similar sherds are known to occur at other Spanish colonial sites in Texas (Fig. 59). This is probably an Indian-made earthenware brought from somewhere in Central Mexico. It closely resembles modern ceramic figurines from Tonalá.

Method of manufacture

Paddle and anvil. Thinning and smoothing marks are visible on the unfinished interior surfaces.

Fig. 39. Non-wheel-made ceramics. A, red-slipped plainware bowl rim; B, C, dark red polished and decorated rim sherds; D, dark gray plainware vessel fragment.

Paste—

Inclusions: A few scattered angular grains of a hard transparent (probably quartz) mineral are visible under magnification. Rounded microscopic sand grains can be found rarely in the paste.

Texture: The paste is fine-grained and uniform, but it has a rough, friable fracture. Small gas pockets commonly occur.

Hardness: About 3.0 to 3.5 on Mohs' scale of hardness.

Color: The paste is a uniform light gray in color. One sherd has a dark gray core in a thickened area where a handle was attached.

Surface Features—

Finish: The outer surface of these sherds is finished in the following sequence: (1) A very fine-grained, light gray slip was applied. (2) Complex polychrome designs were painted over the slip. (3) The surface was highly polished by rubbing in various directions with a narrow (about 2 mm. wide) object. The polished surface usually has a finely cracked pattern resembling the crazing of some glazes.

Color: The gray slip is mostly covered by dull orange, red, and green paints, as described below.

Hardness: Between 2.5 and 3.0.

Decoration—

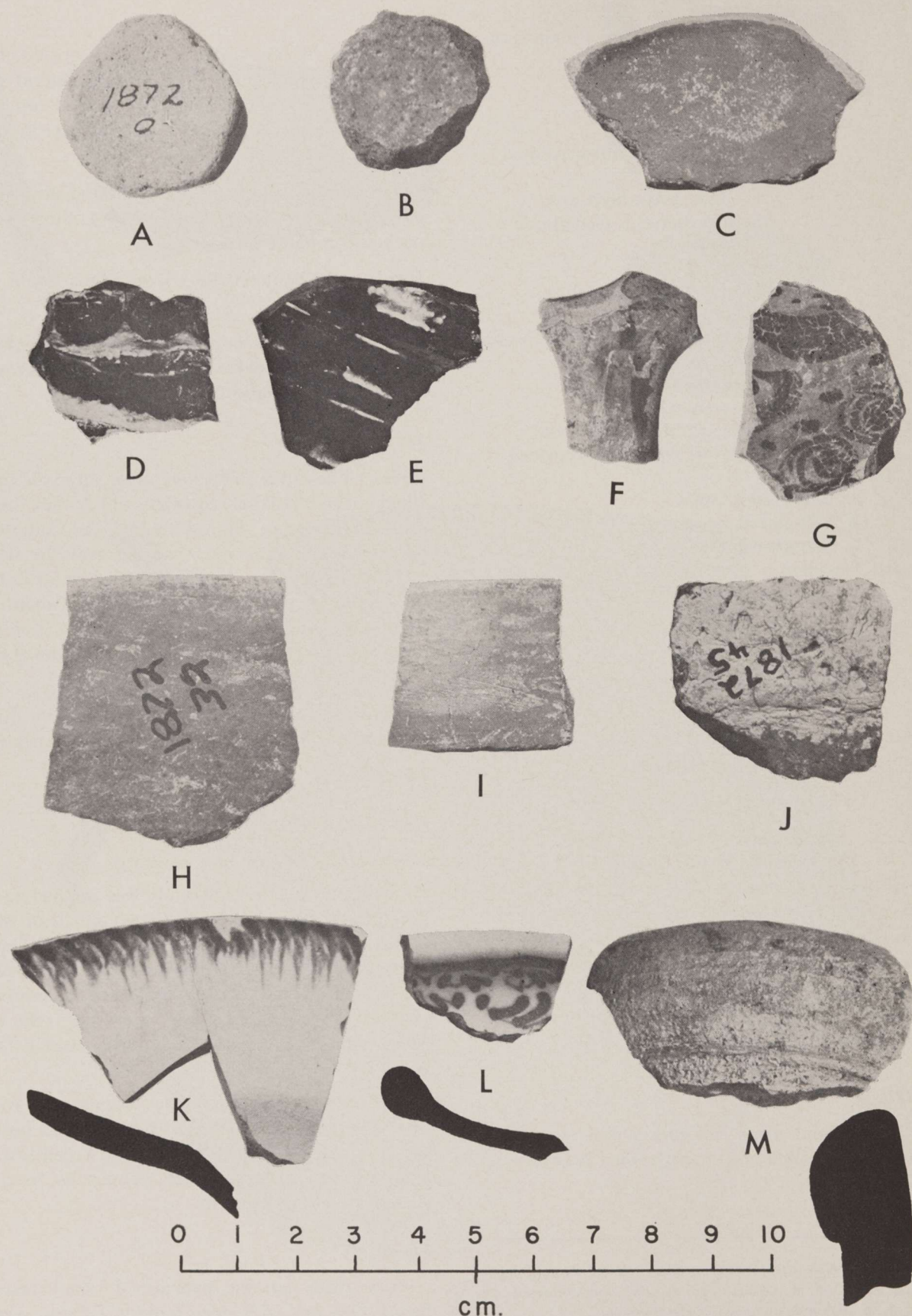
Technique: Slipping and painting.

Painting: A dull orange paint was applied as a background over the gray slip on much of the exterior surface. Dull dark red and dull dark green paints were used for various designs over the orange and gray backgrounds. For an impression of the colors involved, one can refer to Maerz and Paul (1930) as follows: orange 14-A-12, red 7-L-6, and green 24-L-12.

Designs: The exterior surface apparently was well covered with small tight spirals, small nests of concentric circles, small dots, and broad lines, arranged in patterns which cannot be reconstructed from these sherds.

Form—

Very little can be determined about vessel forms. One end of a strap handle, 1.7 cm. wide



and 6 mm. thick, is present. Sherd thickness ranges from 4 mm. to 1 cm.

Provenience. Fig. 41.

DARK RED, POLISHED PLAINWARE

36 sherds

Sherds of this type of earthenware are found on other Spanish colonial sites in this area (Fig. 57), and it probably originated with Indians somewhere in Mexico. This pottery resembles the polychrome painted polished ware described previously.

Method of Manufacture

Paddle and anvil. The vessel interiors are unfinished and show the tool marks.

Paste—

Inclusions: The paste contains a large quantity of microscopic sand grains of many different colors and textures.

Texture: The paste is fine-grained and uniform, but with a rough, ragged fracture. Elongated gas cavities are visible in the paste of most sherds.

Hardness: Between 3.0 and 4.0.

Color: Many sherds have a dark gray, incompletely oxidized core. The paste color ranges from this dark gray at the core to light gray near the surfaces.

Surface Features—

Finish: Only the exterior vessel surfaces were coated with a thin, fine-grained slip. These surfaces were highly polished while the slip was still plastic. A fine system of cracks can be seen in the polished slip under magnification.

Color: The slip is a uniform shade of dark dull red (Maerz and Paul, 1930: 7-L-6).

Hardness: The surface averages about 3.5 in hardness.

Decoration—

The only decoration is the polished red slip described above.

Form—

Very little can be determined about vessel shape from these sherds. The few rim and shoulder sherds indicate that they were probably small bowls and large bottles with constricted necks.

Thickness: One group of small sherds has an average thickness of about 4 mm., and another group of large sherds averages about 1.1 cm. in thickness.

Provenience. Fig. 41.

RED POLISHED DECORATED WARE

(Fig. 39, B, C), 40 sherds

This well made and attractive earthenware has been found on many other Spanish colonial sites in Texas (Fig. 57). It probably was made by some Indian group in Central Mexico.

Method of manufacture—

Probably paddle and anvil.

Paste—

Inclusions: Small rounded grains of a soft, dark, reddish brown material are visible to the unaided eye throughout the paste. These lumps are easily cut with a knife point. No sand grains were detected in the paste of this earthenware, making it distinctly different from the other red slipped earthenware described above.

Texture: Very fine-grained and uniform. Gas cavities up to about 1 mm. long are scattered throughout the paste.

Hardness: About 3.0.

Color: A uniform dark dull red.

Surface Features—

Finish: The interior and exterior surfaces were decorated in the following manner: (1) Surfaces were coated with a very thin and fine-grained slip. (2) While the slip was still somewhat plastic, all surfaces were polished to a high gloss. (3) Panels just below the rim, interior or exterior or both, were roughened by scratching in various directions with a fine-pointed instrument. (4) A

Fig. 40. Ceramics. A, B, smoothed circular discs made from amber-glazed plainware sherds; C, smoothed sidescraper made from red slipped plainware sherd; D, E, dark brown appliqué ware; F, G, non-wheel-made polychrome polished ware; H, I, red slipped plainware; J, plastered sherd; K, blue feather-edge sherd; L, dull white tin-enamelled sherd; M, green glazed olive jar rim.

dull implement, about 1 mm. wide, was used to incise designs very lightly on these roughened panels. The highly polished surface often has a fine network of cracks. The red slip occasionally spalls off in a characteristic spotty fashion, especially around the base of the vessels.

Color: Dark rich red with an occasional light speckling of black (possibly carbon).

Hardness: From about 3.5 to 4.0.

Decoration—

Technique: Roughened panels on a polished surface with lightly incised designs on the roughened areas.

Designs: The only designs that can be reconstructed from these sherds are stylized floral motifs resembling palm fronds, and tightly coiled spiral lines.

Form—

Shapes: Very little can be determined about vessel shapes. There apparently were some sort of small bowls with tiny strap handles and large jars with vertical rims.

Rims: The small bowls had outward curving, scalloped rims. The jars had vertical rims with thickened vertical ridges, spaced several centimeters apart, which separated the design panels (Fig. 39, B).

Base: Some of these vessels, probably the large jars, had a tall, flaring ring foot. These ring bases averaged about 2.5 cm. in height.

Thickness: Body thickness ranges from 5 mm. to 8 mm., basal foot about 6 mm. in thickness.

Appendages: The bowls have small strap handles (Fig. 39, C) just beneath the lip on the exterior surface. These are about 1.1 cm. wide and 7 mm. thick.

Provenience. Fig. 41.

RED SLIPPED PLAINWARE (Fig. 39, A), 58 sherds

The source of this distinctive earthenware is unknown and descriptions of comparable ceramics have not been found. These bowls were possibly made locally or at one of the other frontier mission establishments by Indian servants from Mexico.

Method of manufacture—

Unknown. The surfaces are all well scraped and slip-covered so that no traces of coils can be detected.

Paste—

Inclusions: The paste contains large quantities of rounded sand grains. The grains include white, transparent, light brown, and black minerals. The most conspicuous inclusions are white grains which range up to 0.5 mm. in diameter and are obvious to the unaided eye. These white grains are a hard, translucent mineral which fractures along shiny, angular planes.

Texture: The paste has a fine sandy texture with a granular, irregular fracture.

Hardness: Averages about 3.5 and can be cut easily with a knife.

Color: The sherds all have a dark gray core which is incompletely oxidized. The color gradually grades into a light reddish brown near each surface. The white granular inclusions are visible throughout the paste.

Surface Features—

Finish: The inner and outer surfaces of all sherds are uniformly coated with a bright red slip. This slip is very fine-grained, from 0.2 to 0.4 mm. in thickness, and has flaked away from the paste in small areas on many sherds. The surface of the red slip shows many parallel striations where it was applied and smoothed before it hardened.

Hardness: The slip is about 2.5 in hardness.

Decoration—

The red slip is the only decoration on the sherds. Several sherds have a calcareous deposit over part of the inner surface which apparently resulted from boiling in the vessel.

Form—

Shape: All of the sherds came from small shallow bowls.

Rim: The rims are curved slightly outward (Fig. 39, A).

Lip: Lips are the same thickness as the walls and are rounded.

Base: The bowls had simple rounded bases which were slipped on both surfaces.

Thickness: Within each sherd there is variation in thickness. They range from 4 mm. to 8 mm., and average 6 mm. in thickness.

Provenience. Fig. 41.

DARK GRAY PLAINWARE
(Fig. 39, D), 48 sherds

This earthenware is quite different from all the other wares found at this site, and an examination of ceramics from other Spanish colonial sites in Texas failed to yield comparable sherds. These sherds may represent an indigenous earthenware which was being made and used by the Lipan Apaches in the 1760's.

Method and Manufacture

Probably paddle and anvil. Fired in a reducing atmosphere.

Paste—

Inclusions: A large quantity of rounded sand particles composed of quartz and other minerals are included in the paste. The grains range from microscopic to about 0.5 mm. in diameter.

Texture: The paste has a granular texture with a rough uneven fracture.

Hardness: About 4.0. It is difficult to scratch because of the hard sand grains.

Color: Dark gray to black. Some sherds refired to 1500°F. oxidized to a light orange color and the sand grains were much more apparent.

Surface Features—

Finish: The interior and exterior surfaces are smoothed but undulating and uneven. Very faint impressions, apparently made by a cord-wrapped paddle, are visible on the exterior surfaces of some sherds. Around the lower exterior portion of a large vessel fragment there are numerous shallow scratches in the surface which could have resulted from turning the pot on sharp rocks in a hearth.

Color: The color ranges from dark gray to almost black on all the sherds. On the large vessel fragment there is some carbon staining on the exterior surface and heavy carbonized deposits up to 1 mm. thick on the interior.

Hardness: About 4.0.

Decoration—

There is no evidence of decoration.

Form—

Shape: A large vessel fragment provides the only indication of shape. It has a rounded body with a restricted neck and an outward flaring rim (Fig. 39, D). The reconstructed dimensions of this vessel are: maximum body diameter 25 cm., exterior rim diameter at lip 18 cm., height from base to lip 20 cm.

Rim: Smoothly curved, outward flaring (Fig. 39, D).

Lip: Flattened and the same thickness as the vessel walls.

Body: Rounded or globular.

Base: Smoothly rounded.

Thickness: The vessel has an uneven thickness ranging from 5 mm. to 8 mm.

Appendages: None. A possible suspension hole, 5 mm. in diameter, is drilled through the vessel wall (from the exterior surface only) 4.2 cm. beneath the lip.

Descriptions of comparable ceramics

These sherds from San Lorenzo seem to be quite similar to pottery associated with the Dismal River Aspect (Gunnerson, 1960) in the Southern Plains. Wedel (1959: 592) gives the following summary of Dismal River pottery:

This pottery is gratifyingly uniform over most of the area, although by no means without variations; and it is usually readily distinguishable from other wares of the region. Generally speaking, it is a fairly thin, hard, dark gray to black ware, tempered generously with a very fine to medium sand, and exhibiting almost everywhere a pronounced tendency to fracture into small sherds. There is no evidence of coiling, and the pottery was presumably shaped by lump modeling and by the paddle and anvil method. The few whole or restorable vessels so far recovered, most from 25CH1 [in southern Nebraska] are small to medium in size, not exceeding 25 cm. in maximum body diameter and 27 cm. in height. Shapes are simple, the commonest having a more or less globular to slightly elongated (vertically) body with rounded or subconoidal base,

Fig. 41. Provenience of non-wheel-made earthenware.

Provenience Unit	Polychrome polished	Dark red polished plainware	Red polished decorated ware	Red-slipped plainware	Dark gray plainware	Miscellaneous sherds	Totals
Structure 1							
fill	--	--	--	--	--	--	--
floor	--	--	--	--	1	--	1
Structure 2							
fill	--	--	1	--	--	--	1
floor	--	--	--	--	--	--	--
Structure 7							
fill	--	1	4	--	36	--	41
floor	--	--	--	--	2	--	2
Structure 8							
outside	--	1	--	--	--	--	1
fill	--	--	--	--	--	--	--
floor	--	--	--	2	--	1	3
Structure 11							
fill	--	--	--	--	--	--	--
floor	--	--	--	1	--	--	1
Structure 12							
fill	1	--	--	--	--	--	1
floor	--	2	--	--	--	--	2
Structure 13							
fill	--	--	--	--	--	--	--
floor	2	--	4	4	--	1	11
Structure 14							
fill	1	--	1	--	--	--	2
floor	1	4	--	--	--	--	5
Midden	3	20	10	44	6	7	90
Gate area	--	--	--	1	--	--	1
W. Wall area	1	--	--	--	--	--	1
Surface	1	8	20	6	3	--	38
Totals	10	36	40	58	48	9	201

constricted neck, and vertical to slightly outflaring rim. Vessel lips are usually simple and unmodified, but may be flattened or slightly thickened horizontally, especially where they have been decorated. There is no certain evidence of bowls, bottles, and other shapes; and handles, lugs, and other appendages are everywhere rare or absent. Much of the pottery is plain surfaced; surface roughening with a grooved or thong-wrapped paddle (i.e., simple stamping) is often present; and very rarely, incising is found.

No other description has been found which so closely fits the sherds from San Lorenzo.

Provenience

The majority of these sherds (Fig. 41) came from the fill of Structure 7, and represent one

large vessel fragment. The debris in the fill of Structure 7 apparently originated in the mission midden.

MISCELLANEOUS NON-WHEEL-MADE SHERDS

Nine small body sherds could not be included in any of the above groups.

SOFT PASTE, WHEEL-MADE EARTHENWARE

UNGLAZED, RED SLIPPED PLAINWARE

(Fig. 40, H, I), 49 sherds

These sherds resemble some of the plainware from Mission Espíritu Santo; they were probably made either there or at one of the other more permanent settlements on the frontier.

Method of manufacture: Wheel turned.

Paste—

Inclusions: These sherds have numerous fine rounded grains of various materials included in the paste—probably inadvertently with the clay. In addition to this sand, some sherds contain small angular fragments of a soft white mineral, and eight sherds have many fragments of crushed bone in the paste.

Texture: The paste has a granular sandy texture with a rough, irregular fracture.

Hardness: Variable between about 2.5 and 4.0 on Mohs' scale.

Color: Most of the sherds have a dark gray core comprising about one-third to one-half of the sherd thickness. The paste is oxidized to a light orange color on the interior and exterior surfaces.

Surface Features—

Finish: Most of the sherds are well smoothed on both surfaces, but a few show distinct parallel striations, derived from their being turned on the potter's wheel, on the interior surfaces. The exterior surface and/or interior surface of all sherds is coated with a thin, very fine-grained slip: 5 interior only, 28 exterior only, 16 both surfaces.

Color: The slip color ranges from a dull, pale red to a dull, dark red. The surface color outside the slipped parts of the vessels range from dull orange to light gray.

Hardness: The surface is relatively soft, averaging between 2.0 and 2.5.

Decoration—

The red slip described above is the only form of decoration.

Form—

Very little can be determined about vessel form from these sherds. They seem to represent large jars. The sherd thicknesses range from 5 mm. to 1.1 cm. and average about 8 mm.

Provenience. Fig. 56.

LEAD-GLAZED, AMBER, PLAINWARE
(Fig. 42, A, B; Fig. 45), 1,988 sherds

This was the common utility ware at Mission San Lorenzo. It probably was made in large quantities locally or at one of the other frontier mission establishments. Since San Lorenzo was

a rather small-scale and temporary outpost and the documents make no mention of a ceramic-making operation there, it is quite likely that this utility ware was brought from the permanent establishments at San Antonio or one of the settlements just south of the Rio Grande.

Method of manufacture

Wheel-turned.

Paste—

Inclusions: The most obvious inclusions are numerous small, angular fragments of a soft white mineral (possibly calcite) which are scattered throughout the paste. In addition, there are rounded sand grains in all sherds; these may have been naturally associated with the clay. Some sherds also have a few larger (up to 2 mm. in diameter) lumps of a dark, opaque red material.

Texture: Medium to fine-grained and fairly uniform. The paste contains many small, angular cavities and it usually fractures roughly and irregularly.

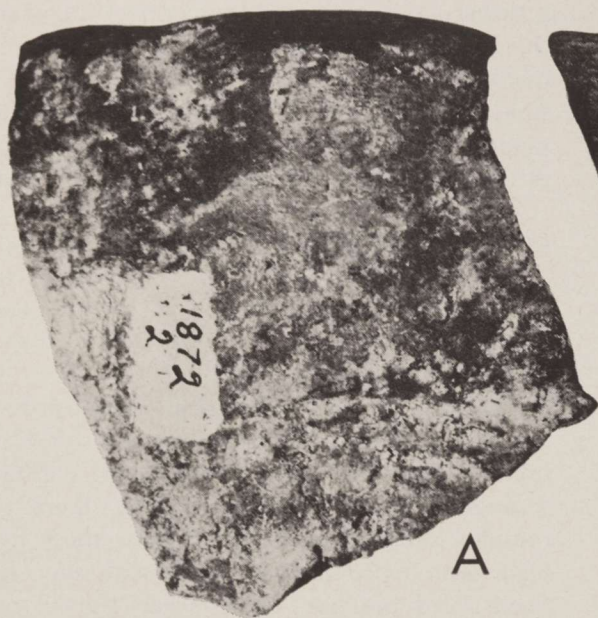
Hardness: Average between 3.5 and 4.5 on Mohs' scale.

Color: Paste colors are (1) light orange, probably produced by firing in an oxidizing atmosphere; (2) black or dark gray, reducing atmosphere; (3) black or dark gray core with orange or light gray surface layers.

Surface Features—

Finish: The surfaces are poorly smoothed, and frequently show parallel striations made by the potter's fingers and by sand grains in the paste which were dragged along the surface making deep grooves. Some sherds are glazed on interior and exterior surfaces, some on interior surfaces only, some are unglazed (181 sherds, apparently from unglazed areas of vessels with glazed interior bottoms). The glaze, unevenly and carelessly applied, ranges from a trace to about 0.5 mm. in thickness. The surface of the glaze is uneven and the larger grains in the paste sometimes extend through the glaze, which usually is very finely crazed (visible only under magnification).

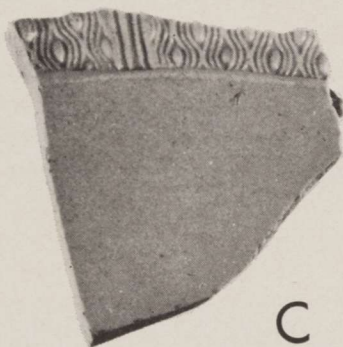
Color: The paste is always visible through the glaze, and under magnification, and when slivers



A



B



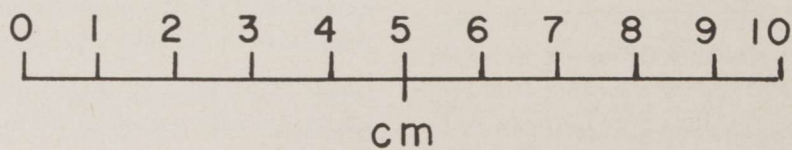
C



D



E



are detached, the glaze has a distinct amber color. Sherds which have a heavy coating of glaze usually have a black or gray paste beneath so that superficially they appear to be coated with a dull green glaze (this green is similar to 15-J-5 in Maerz and Paul, 1930). But close examination shows this to be an illusion created by the dark gray paste seen dimly through the amber glaze. Sherds which have a light coating of glaze, or none at all, have an orange-colored paste at the surface and appear orange in color. The orange and green colors are frequently found on different areas of one large sherd.

Hardness: The glaze surface has a hardness of between 4.5 and 5.5.

Decoration—

The only decoration appears on the lips of a few small bowls. Eleven rim sherds have a flattened lip with a notched outer edge formed by closely spaced vertical notches which were pressed into the plastic clay with a cylindrical implement about 1 mm. in diameter.

Form—

There are four basic shapes in this utility ware. (1) Small simple bowls are hemispherical in shape, with vertical or slightly outsloping rims (Fig. 43, B), rounded lips, and rounded bases. Reconstructed rim diameters range from 16.5 to 19 cm.; vessel depths from 7 to 9 cm. Thickness ranges from 5 mm., averaging 7 mm. These bowls are thick and coarse, usually heavily glazed, and dark in color. (2) These plates have widely flaring rims (Fig. 43, C) which slope smoothly into slightly rounded or flattened bases. The lips are thinned and flattened and projected rim diameters range from 20 to 20.8 cm. The thickness is fairly uniform and ranges from 4 mm. near the lip to 7 mm. at the base. The plates are rather thin and well shaped, tend to be lightly glazed, and are usually light in color. (3) Jars, the most common vessel form, have spherical bodies with tall rims ranging from vertical to sharply flaring. The rims usually slope smoothly

into the body (Fig. 43, D), but a few form a definite angle with the body (Fig. 43, E). The lips are either rounded or slightly flattened and are never thickened or thinned. The reconstructed exterior rim diameters range from 14 to 23 cm. and average about 21 cm. The bases are usually rounded, but a few vessels have flattened bases (Fig. 43, K), or a short, basal ring foot (Fig. 43, J). Some of the jars have horizontal handles molded to the vessel exteriors. These handles were formed as follows: A cylindrical object about 1 cm. in diameter was held vertically against the side of the still plastic vessel. Either a flattened lump or a roll of plastic clay about 1 cm. across, was securely and smoothly pressed onto the vessel wall over the vertical cylinder. The vertical cylinder was removed, leaving a round suspension hole through the handle. One large vessel fragment has an upward sloping horizontal handle placed 8 cm. below the lip. The thickness of these vessels ranges from 6 mm. to 1.1 cm. and averages about 8 mm. (4) Another vessel form, represented by only three sherds, is a *molcajete* or chili-grinding bowl. It is hemispherical, with a rounded base which is stabilized by three short, stubby legs spaced evenly around the center of the base. The interior surface of the bowl has deeply incised lines radiating from the center toward the rim. These lines, applied beneath the glaze while the clay was plastic, are about 0.5 mm. wide and 0.5 mm. deep. They are spaced from about 1 mm. to 4 mm. apart, and they furnish an abrasive surface through the thinly applied glaze which was used to grind chilis and other plant products. Similar vessels can be found in northern Mexican markets.

Provenience. Fig. 44.

LEAD-GLAZED, AMBER, NODDED WARE 9 sherds

Sherds comparable to these have not been found at other Spanish colonial sites in Texas (Fig. 57), and published descriptions of similar ceramics could not be found.

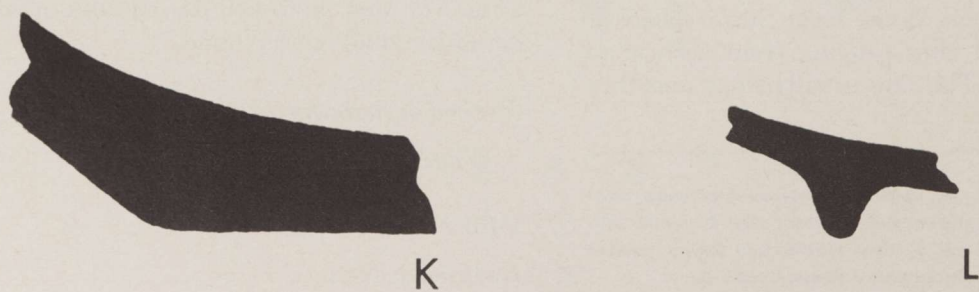
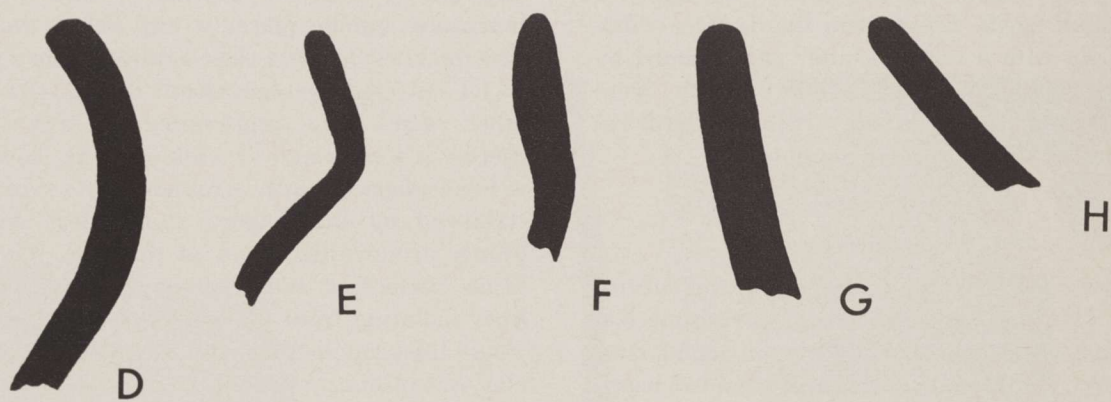
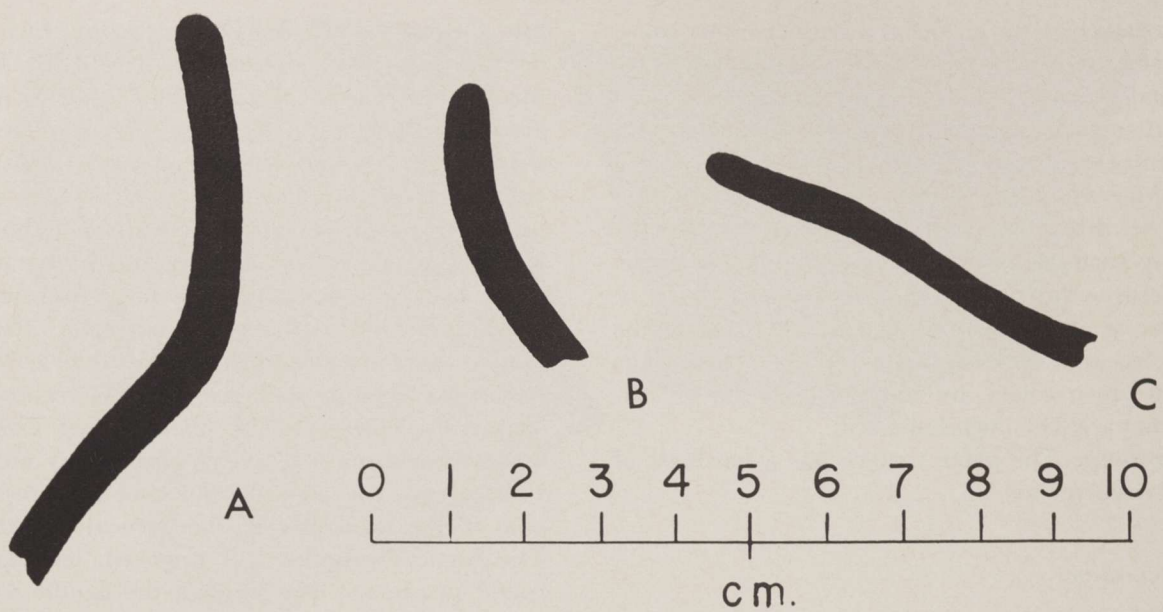
Method of manufacture

Wheel-turned, kiln fired.

Paste—

Inclusions: None.

Fig. 42. Ceramics. A, amber lead-glazed plainware bowl rim; B, amber lead-glazed plainware jar rim; C, white salt-glazed stoneware sherd; D, clear lead-glazed brown painted jar rim; E, clear lead-glazed brown painted bowl rim.



Texture: Very fine-grained and uniform with some elongated cavities visible under magnification.

Hardness: Between 3.0 and 3.5.

Color: Light gray throughout.

Surface Features—

Finish: Interior and exterior surfaces covered with a thin (about 0.1 to 0.2 mm.) glaze. The glaze has a very fine craze pattern.

Color: The glaze is pale amber in color; the light gray paste, visible through the glaze, produces a dull green superficial color on the sherds. In a few spots the glaze is very thin and the paste has partially oxidized to a light orange color.

Hardness: About 6.0.

Decoration—

Rows of small rounded nodes, 5 mm. in diameter and a little less than 1 mm. in height, decorate the exterior surfaces of the sherds. They are spaced about 4 mm. apart and seem to have been formed by slightly depressing the surrounding area and leaving the nodes standing out. The exact distribution of these nodes on the vessel cannot be determined.

Form—

All of the sherds are probably from the same small cup with a vertical rim and a slightly thinned and rounded lip. A small vertical strap handle 1.3 cm. wide and 4 cm. thick was attached to one side. No basal sherds are present. The cup walls are from 3 to 4 mm. thick.

Provenience

All of these sherds were found beneath the surface of the midden.

LEAD-GLAZED, CLEAR, BROWN PAINTED WARE
(Fig. 42, D, E), 492 sherds

Painted, lead-glazed earthenware very similar to that described below can be bought in any market in northeastern Mexico at the present

time. The colors, designs, and vessel shapes (sets of bowls and straight-rimmed bean pots with handles) are surprisingly similar to this mission-associated ware.

Method of manufacture

Wheel-turned and kiln fired.

Paste—

Inclusions: The paste contains numerous rounded, bright to dull orange-red lumps of an unidentified material. The lumps range in size from microscopic to about 1 mm. in diameter, the average size being about 0.5 mm. They have an angular glassy fracture, and can be cut with a knife blade. In addition, occasional rounded clear grains, probably quartz, also are included in the paste.

Texture: The paste is very fine-grained and uniform except for the inclusions mentioned above. It has a straight but granular fracture. Small elongated gas cavities are scattered through the paste in some of the harder sherds.

Hardness: From 3.0 to about 4.5 on Mohs' scale. It can be cut with a steel knife.

Color: The paste always is light in color, ranging from very light tan to light orange-red and light brown, the shade depending on the quantity and size of the inclusions and the degree of oxidation during firing.

Surface Features—

Finish: These sherds are all glazed on the interior surface and about half of them on the exterior surface as well. Apparently the vessels were glazed on the interior and on the upper, decorated part of the exterior, but they usually had unglazed exterior bases. The lead glaze is very thin, clear, and averages about 0.1 mm. or less in thickness. This glaze is finely crazed and very glossy. The surface of the glaze is bumpy and uneven because of the inclusions in the paste.

Color: The light tan to light orange-red and medium brown paste shows through the clear glaze and the inclusions in the paste can be seen clearly.

Hardness: The glaze ranges from about 5.0 to 6.0 in hardness.

Fig. 43. Sherd profiles of amber lead-glazed plainware. A, typical jar rim; B, typical bowl rim; C, typical plate rim; D-F, other jar rims; G, H, other bowl rims; I-L, typical basal sherds. Exterior surfaces of all profiles are to the left.

Decoration—

Technique: Underglaze painting.

Painting: Dark brown paint (probably manganese-derived) was applied on the paste before glazing. The paint, ranging from very thin and smooth to thick and lumpy, was not carefully applied.

Designs: The designs consist of carelessly applied spirals, flattened spirals, dots, crescents, broad lines, and rows of comma-shaped elements. These designs were applied primarily around the rim on the exterior surfaces of vessels. Some vessels had lines or rows of dots along the lip, and a few vessels had designs in the interior bottom surface.

Form—

Shapes: Two vessel shapes are represented: small shallow bowls and small jars with rounded bodies, distinct shoulders, tall cylindrical rims, and vertical strap handles (Fig. 42, D). The latter form is very similar in size and shape to the copper chocolate pots found at Quiburi (DiPeso, 1953: 185 and plate 71-A) in the Southwest, and Mission Espíritu Santo in Texas, and these lead-glazed earthenware pots may have been in imitation of the copper pots to serve the same purpose.

Rim: The bowls have curving rims which slope slightly outward and have a reconstructed diameter of about 14 cm. The small jars have straight vertical rims, often not perfectly round, which have a reconstructed diameter of about 9 cm.

Lip: The lips on the bowls are rounded and sometimes painted. The jar lips are slightly thickened and rounded (Fig. 42, D) and also sometimes painted.

Base: The bases are generally rounded, but 7 sherds are from vessels which had a slight ring foot around the base.

Thickness: Ranges from 2 mm. to 6 mm., the average being about 3 mm. This thinness caused some vessels to be slightly warped or off-round, and most of the sherds are quite small compared to sherds from thicker wares.

Appendages: The jars have small vertical strap handles attached to the exterior surface of the

vertical rims. These handles average about 1.2 cm. wide and 7 mm. thick.

Descriptions of comparable ceramics

Published descriptions of comparable ceramics have not been found, but an examination of the collections at The University of Texas shows that similar wares occur at later Spanish colonial sites such as Mission Espíritu Santo and house sites in the Falcon Reservoir area (Fig. 57).

Provenience: Fig. 44.

LEAD-GLAZED, GREEN, OLIVE JARS
(Fig. 40, M), 33 sherds.

These sherds are from large, sturdy jars which were widely used in Spanish colonial times for transporting and storing olives, olive oil, wine, dried foods, and water (Goggin, 1960: 6). Most probably were made in Spain, but by the 1760's there may have been potteries in Mexico which were turning out similar jars.

Method of manufacture

Wheel-turned and kiln-fired.

Paste—

Inclusions: The paste is well tempered with rounded sand grains up to about 1 mm. in diameter; a few sand grains as large as 4 mm. in diameter were found. They are clear, white, dull red, and dark brown.

Texture: The paste is coarse and lumpy with a rough, uneven fracture. Elongated cavities and cracks are common in the paste, and these sometimes cause spalling-off of sherd surfaces.

Hardness: Between 3.0 and 4.0 on Mohs' scale.

Color: Paste colors range from pale pink to dull brick red. A few sherds have a light gray core.

Surface features—

Finish: Broad parallel ridges on the interior and exterior surfaces constitute one of the most distinctive features of these sherds. Apparently made by the potter's fingers while the vessel was being turned on the wheel, the ridges are up to about 2 mm. in height and average about 1 to 1.5 cm. from crest to crest. The interior surfaces of all sherds are uniformly coated with a thin but opaque green glaze composed of very small,

angular grains which are partially fused together. The glaze has a very rough, uneven surface, is never crazed, is pebbly and distinctly different from all other glazes (smoothly fused layers) found on San Lorenzo ceramics. The exterior surfaces of the sherds are well-smoothed and coated with a thin layer of very fine particles which may have floated to the surface while the clay was plastic. The larger sand grains protrude through this layer, giving the surface a speckled appearance.

Color: The interior glazed surfaces range from pale green to dull, dark green in color. The exterior surfaces are light gray and light pink to almost white with a speckling of darker sand grains.

Hardness: The glaze, softer than glazes found on other ceramics from the site, is between about 4.5 and 6.0 on Mohs' scale, and it can be scratched and easily pulverized with a steel knife point. The exterior surfaces are about 3.5 in hardness.

Decoration—

None.

Form—

Except for one rim fragment, all of these are large body sherds which indicate nothing about vessel size and shape. Goggin (1960) illustrates various olive jar forms.

Rim: The one rim sherd (Fig. 40, M) is like the Late Style rim illustrated by Goggin (1960: Fig. 10:C), although San Lorenzo is earlier than his suggested date (post-1800) for the style. The rim thickness is 1.7 cm., the height of the thickened portion is 2.7 cm., and the projected exterior rim diameter is 8.6 cm.

Thickness: Ranges from 7 mm. to 2 cm., average 1.3 cm.

Descriptions of comparable ceramics

Caywood, 1950: 86; DiPeso, 1953: 223-224; Goggin, 1960; Olds, 1962: 785-193, Fig. XXI-B. Comparable sherds have been found in small numbers at other Spanish colonial sites in Texas (Fig. 57).

Provenience. Fig. 44.

MISCELLANEOUS

LEAD-GLAZED SHERDS

These 22 sherds fall into six groups which probably represent individual vessels. They do not fit into any of the wares described above because of minor differences in paste or glaze. The provenience appears in Fig. 44.

TIN-ENAMELED, GLOSSY WHITE MAJOLICA

(Figs. 45-55), 613 sherds

Majolica had its beginnings in the Maiolica or Hispano-Moresque earthenwares made at various centers in Spain and Italy before and during the colonizing of the Western Hemisphere (Barber, 1960, A). After about the middle of the sixteenth century the city of Puebla (La Puebla de los Angeles) in Mexico began producing large quantities of tin-enameled majolica, and by the middle of the eighteenth century, when San Lorenzo was established, Puebla was the primary source of this type of pottery in the New World. Since the supplies for San Lorenzo came directly from Mexico, all of the majolica found there probably was manufactured at potteries in and around the city of Puebla. This distinctive earthenware has been found at Spanish colonial sites in Florida, Texas, New Mexico, Arizona, California, and throughout Mexico, and it occurs in small quantities in some English colonial sites along the Atlantic coast of the United States. Good descriptions of the history of majolica are found in Barber (1908, 1911 a-b, 1915a) and Caywood (1950: 81-97). Details about the majolica industry in Puebla, Mexico, are given in Cervantes (1939).

Method of manufacture

Wheel-turned and kiln fired.

Paste—

Inclusions: Bright red, opaque lumps of an unidentified material are scattered through the paste. These may be fragments of the "red clay" which was mixed with white clay in making majolica (Barber, 1911, a: 14). Generally the red grains are very fine, only a few being visible to the unaided eye, but rarely a lump as large as 1 mm. in diameter is found. Angular fragments of a translucent pink material are present in

Fig. 44. Provenience of lead-glazed sherds.

Provenience Unit	Amber glaze, plainware				Amber glaze nodded ware	Clear glaze brown p'td. ware	Green glaze olive jars	Misc. lead glazed sherds	Totals
	bowl rims	plate rims	jar rims	other sherds					
Structure 1									
fill	--	--	--	--	--	--	--	--	--
floor	1	--	3	14	--	5	--	--	23
Structure 2									
outside	--	--	1	2	--	1	--	--	4
fill	--	--	--	--	--	--	--	--	--
floor	--	--	--	--	--	--	--	--	--
Structure 3									
fill	--	--	--	--	--	--	--	--	--
floor	--	--	--	8	--	--	--	--	8
Structure 7									
outside	--	--	--	2	--	1	--	--	3
fill	2	1	4	75	--	14	2	--	98
floor	--	--	--	9	--	2	--	--	11
Structure 8									
outside	--	--	--	5	--	4	4	--	13
fill	1	--	--	3	--	2	--	--	6
floor	--	--	2	10	--	8	--	--	20
Structure 10									
fill	--	--	--	3	--	3	--	--	6
floor	--	--	--	2	--	--	--	--	2
Structure 11									
outside	1	--	1	11	--	4	--	1	18
fill	--	--	--	2	--	2	--	--	4
floor	1	--	--	7	--	--	--	--	8
Structure 12									
fill	--	--	--	4	--	9	--	--	13
floor	1	--	2	25	--	13	3	--	44
Structure 13									
fill	--	1	--	5	--	2	--	--	8
floor	2	3	--	43	--	20	1	3	72
Structure 14									
outside	--	--	--	5	--	--	--	--	5
fill	--	--	--	27	--	6	--	--	33
floor	1	--	--	27	--	13	1	--	42
Midden	38	27	47	979	9	227	4	10	1,341
Gate area	--	--	--	1	--	3	--	--	4
W. Wall area	1	--	2	34	--	11	1	1	50
Surface	37	5	21	479	--	142	18	7	709
Totals	86	37	83	1,782	9	492	34	22	2,545

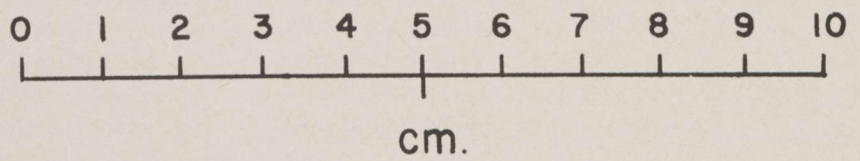
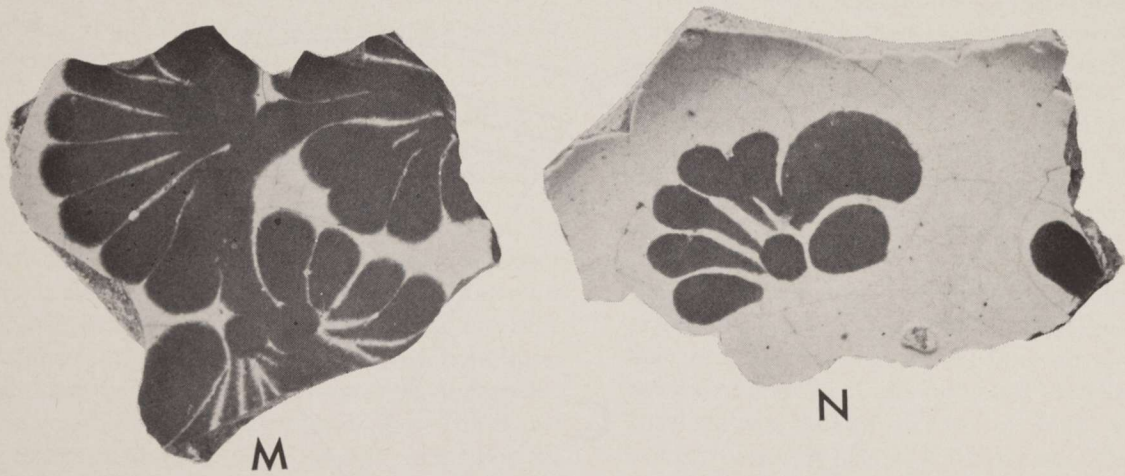
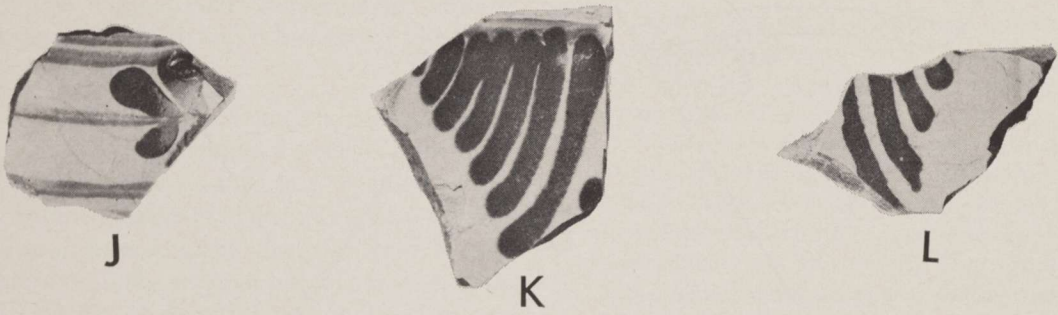
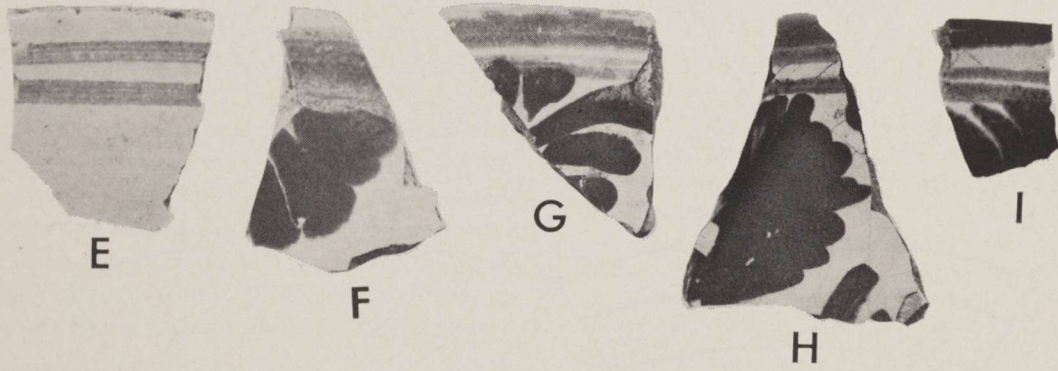
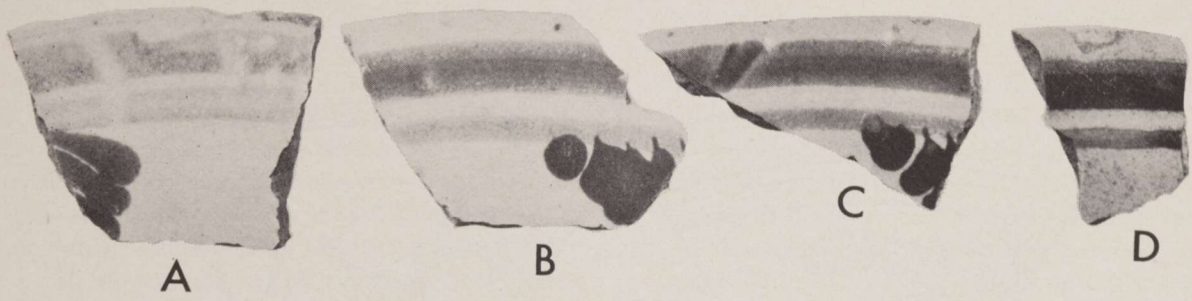
some sherds. Exclusive of these inclusions, the paste is composed of a very fine-grained white clay.

Texture: Very fine-grained and uniform.

Hardness: Most sherds are between 2.0 and 3.5 on Mohs' scale, but a few specimens are as soft as 1.5 or as hard as 4.0. The harder sherds were

probably fired longer or at a higher temperature. The paste of all sherds can be cut easily with a knife, and the softer ones can be scratched with a fingernail.

Fig. 45. Ceramics, glossy white majolica. A-I, dark and light blue on white rim sherds; J-N, dark and light blue on white body sherds.



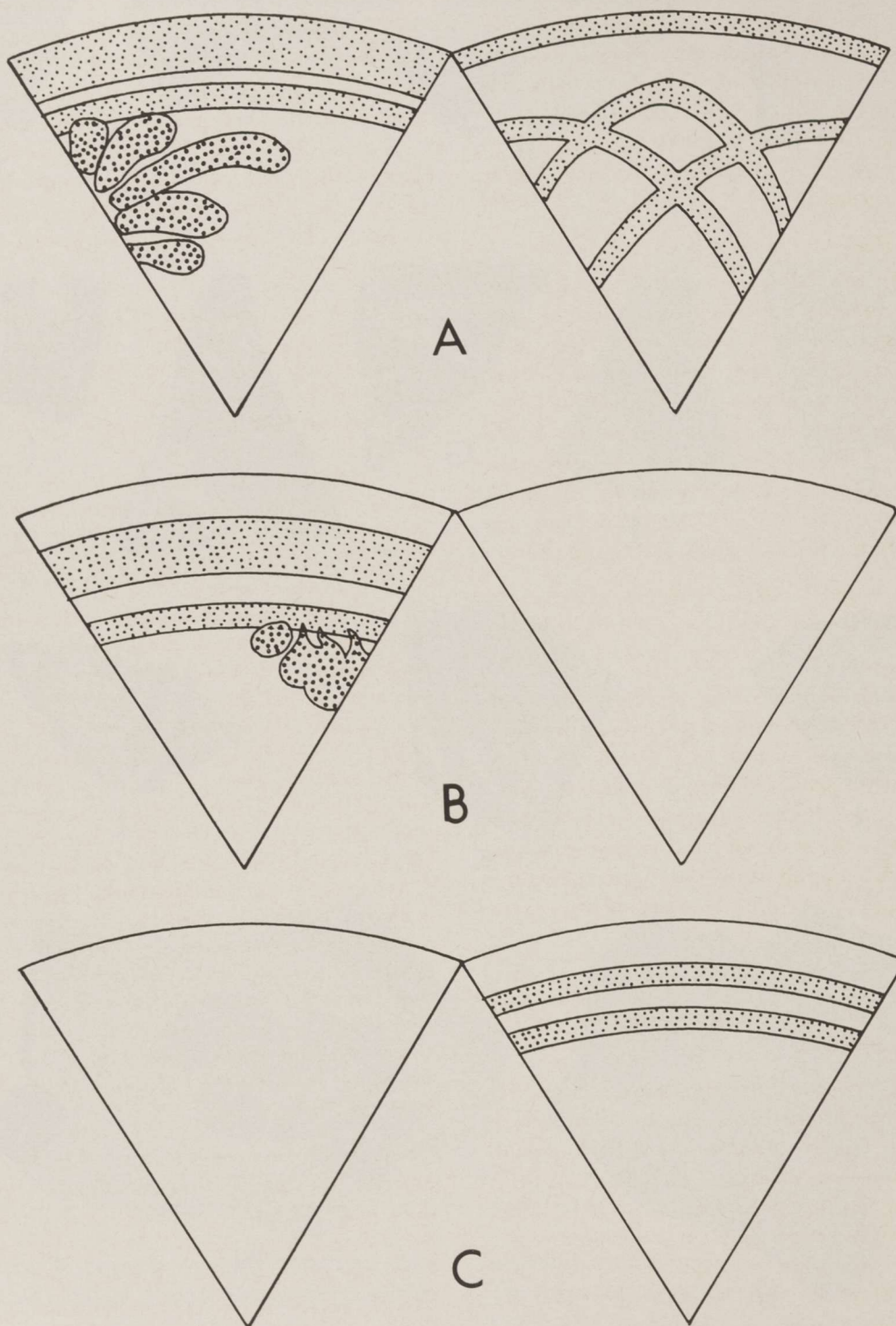


Fig. 46. Ceramics. A-C, typical rim sherds of dark and light blue on white majolica. Exterior surfaces of sherds to right.

Color: Paste color ranges from white to pale red. The reddish sherds supposedly are from vessels which were fired longer at higher temperatures (Caywood, 1950: 81). A microscopic examination of sherds from San Lorenzo reveals that the reddish sherds contain more of the red inclusions mentioned above, which adds to their reddish appearance. Sherds refired to 2,000°F. and 1,500°F. for 30 minutes did not change appreciably either in color or hardness.

Surface Features—

Finish: The interior and exterior surfaces are completely covered with an opaque enamel composed of tin oxide in a transparent lead glaze (Jelks, 1958: 202). The enamel is uniformly applied, but in some cases it has worn off along the lip and around the basal foot. Striations made in the clay by the potter's fingers show through the enamel very rarely. Marks left by the spurs or stilts used in stacking the vessels for firing are commonly found on both surfaces of basal sherds.

Color: The enamel color ranges from white to pale gray and cream, and it has a very glossy appearance.

Hardness: The enamel surface has a hardness of about 6 to 7 on Mohs' scale. Under magnification (30X), the surface is smoothly vitrified and in some instances appears to have a superficial coating of transparent glaze. Interior heat bubbles are common in the enamel, but do not open to the surface. Slight crazing of the enamel occurs commonly, although no evidence of flaking or peeling was found.

Decoration—

Technique: Painting in opaque colors on a white enamel background.

Paint: Dark opaque blue, the most commonly used color, was applied in a thick viscous form which stands out in relief from the background enamel. Other colors used, all of which are thin and flat compared to the dark blue, are light blue, light and dark brown, yellow, orange, and green. The possible source materials of these colors are as follows: Blue—cobalt; brown—manganese; yellow—antimony; orange—antimony plus iron oxide; green—copper (Singer *et al.*, 1958: 335). Although it is very difficult to compare accurately the shiny majolica colors with the flat colors in standard color references, the approximate references for San Lorenzo majolica in Maerz and

Paul (1930) are as follows: dark blue 39-L-12 and 38-K-9, light blue 35-I-10 and 34-G-7, green 20-J-9 and 23-H-11, orange 12-L-9 and 13-F-11, yellow about 9-L-4. All colors were applied over the white background enamel and fused into it during the firing. The brown paint usually has a thin mottled appearance when examined closely.

The majolica sherds from San Lorenzo can be divided into five descriptive groups on the basis of color and color combinations. These groups may simply correspond to separate sets or shipments of dishes:

(1) Dark and light blue designs on white. A few sherds have only dark blue on white, but the two shades of blue were usually used together for different design elements—dark blue for floral motifs and broad lines, light blue for narrow lines and spiral designs on vessel exteriors.

(2) Dark and light blue on white with narrow brown lines outlining and connecting the blue design elements.

(3) Light or dark blue lip bands on otherwise undecorated white vessels.

(4) Orange, yellow, green, blue, and light and dark brown designs on white background enamel. All of these colors are frequently found, used for different elements, on one sherd.

(5) Plain white enameled sherds with no painted designs. Many of these sherds probably came from walls or bases of vessels with decorated rims, but some plain white rim sherds seem to represent small undecorated cups and bowls. The number of rim sherds, body sherds, and basal sherds showing each of the above color combinations appears in Fig. 52. Majolica styles from San Lorenzo apparently correspond to the following types named by John M. Goggin: dark and light blue on white = *St. Augustine Blue-on-white*; blue and brown on white = *Puebla Blue-on-white*; blue rim on white = *Huejotzingo Blue-on-white*; polychrome on white = *Aranama Polychrome* (Goggin, 1950; Mounger, 1959: 182, 191, 192).

Designs: These consist of lip bands, interior and exterior lines paralleling the rim, flattened spiral lines and overlapping curved lines on vessel exteriors, and floral motifs on vessel interiors. The floral designs consist of rows of thick, rounded leaves, composite leaves, and blossoms. These elements occur in clusters, suspended from lines, arranged on brown stems, or free-floating on the white background. Zoomorphic elements are commonly found on majolica at other sites, but are extremely rare on sherds from San Lorenzo. The variety of rim designs is shown in Figs. 46,



Fig. 47. Ceramics, glossy white majolica. A-I, blue and brown on white rim sherds; J-N, blue and brown on white body sherds. Note drilled hole in lower edge of C.

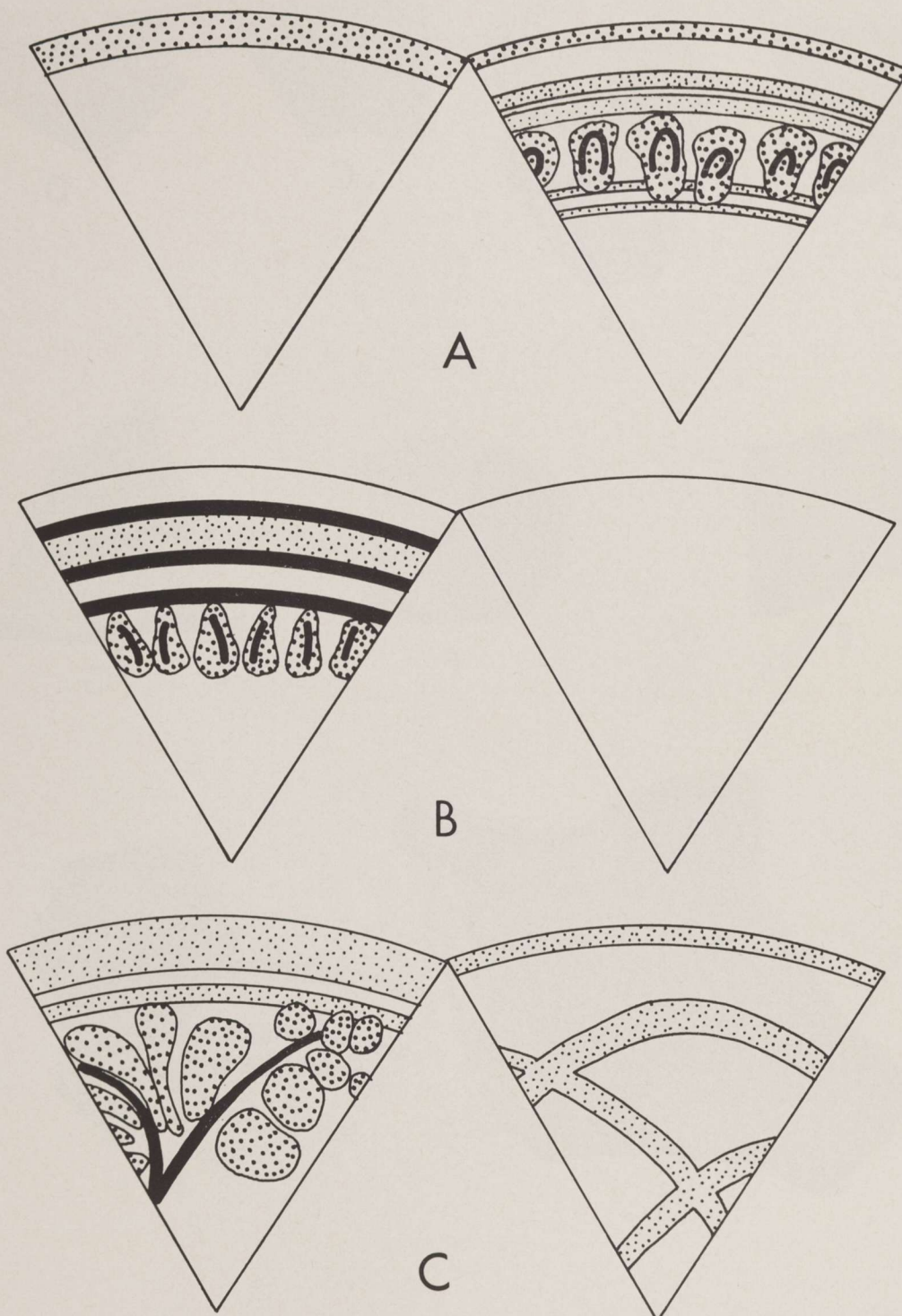


Fig. 48. Ceramics. A-C, typical rim sherds of blue and brown on white majolica. Exterior surfaces of sherds to right.

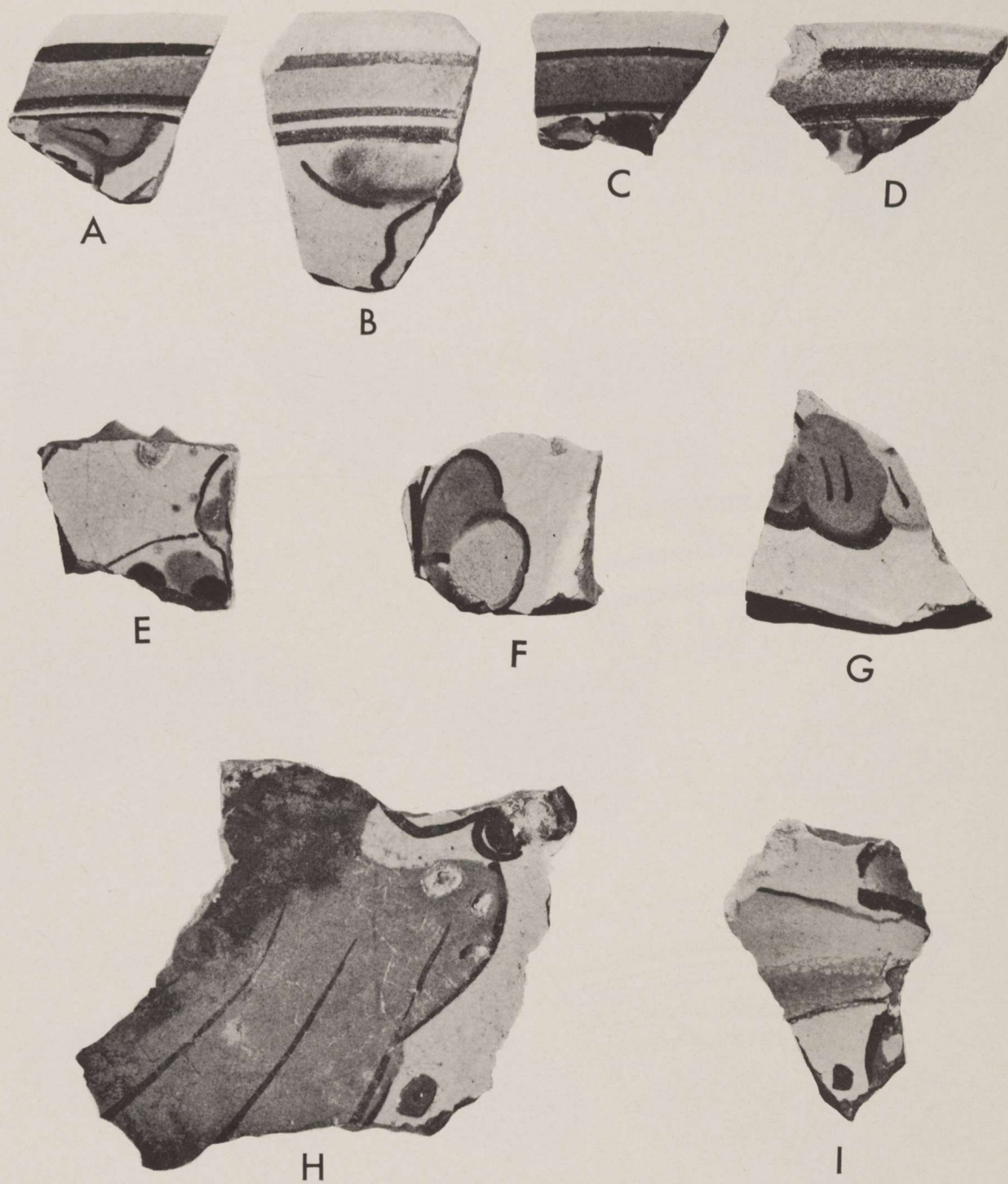


Fig. 49. Ceramics, glossy white majolica. A-D, polychrome on white rim sherds; E-I, polychrome on white body sherds.

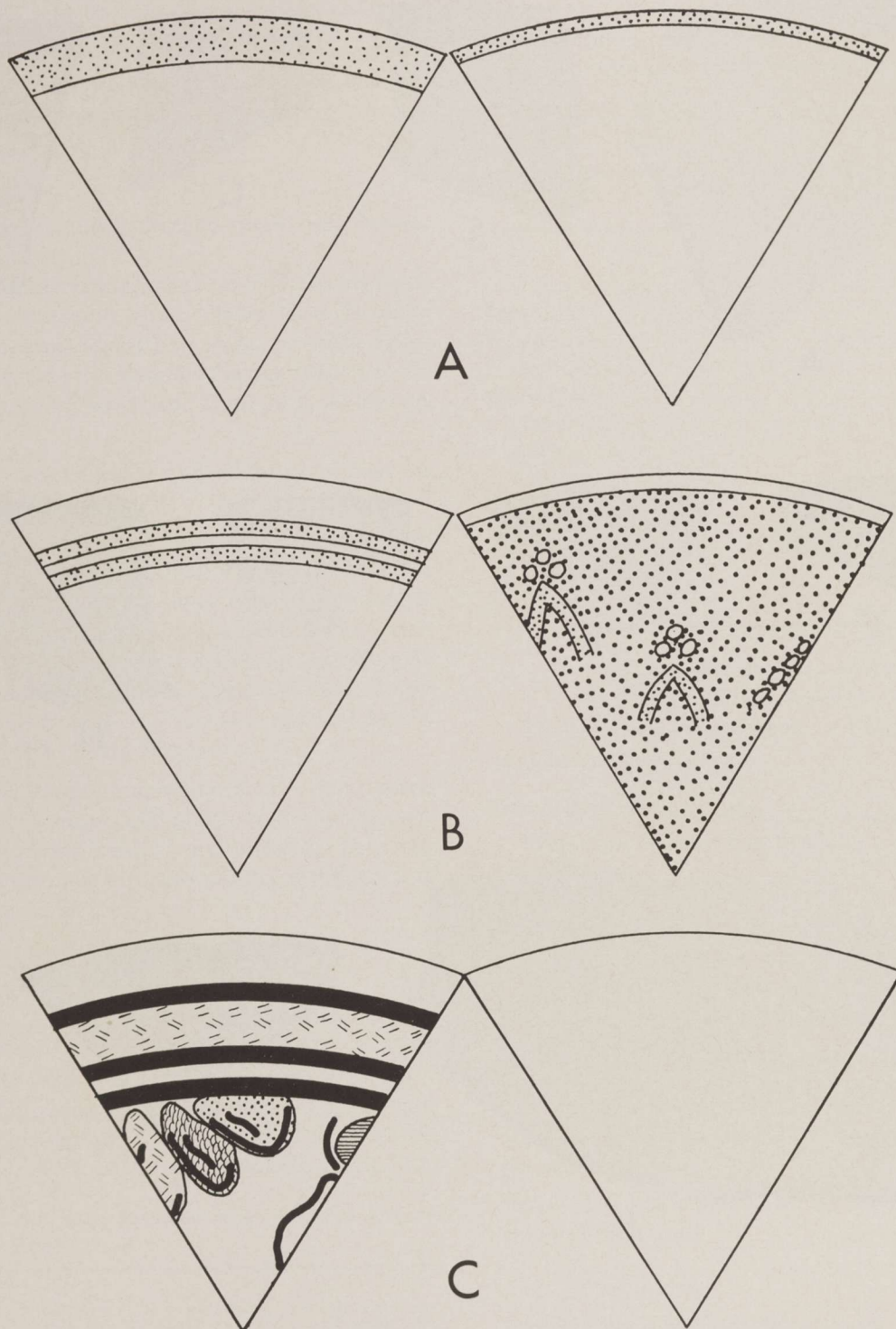


Fig 50. Ceramics. A, typical rim sherd of blue rim on white majolica; B, unusual rim sherd of dark and light blue on white majolica; C, typical rim sherd of polychrome on white majolica. Exterior surfaces of sherds to right.

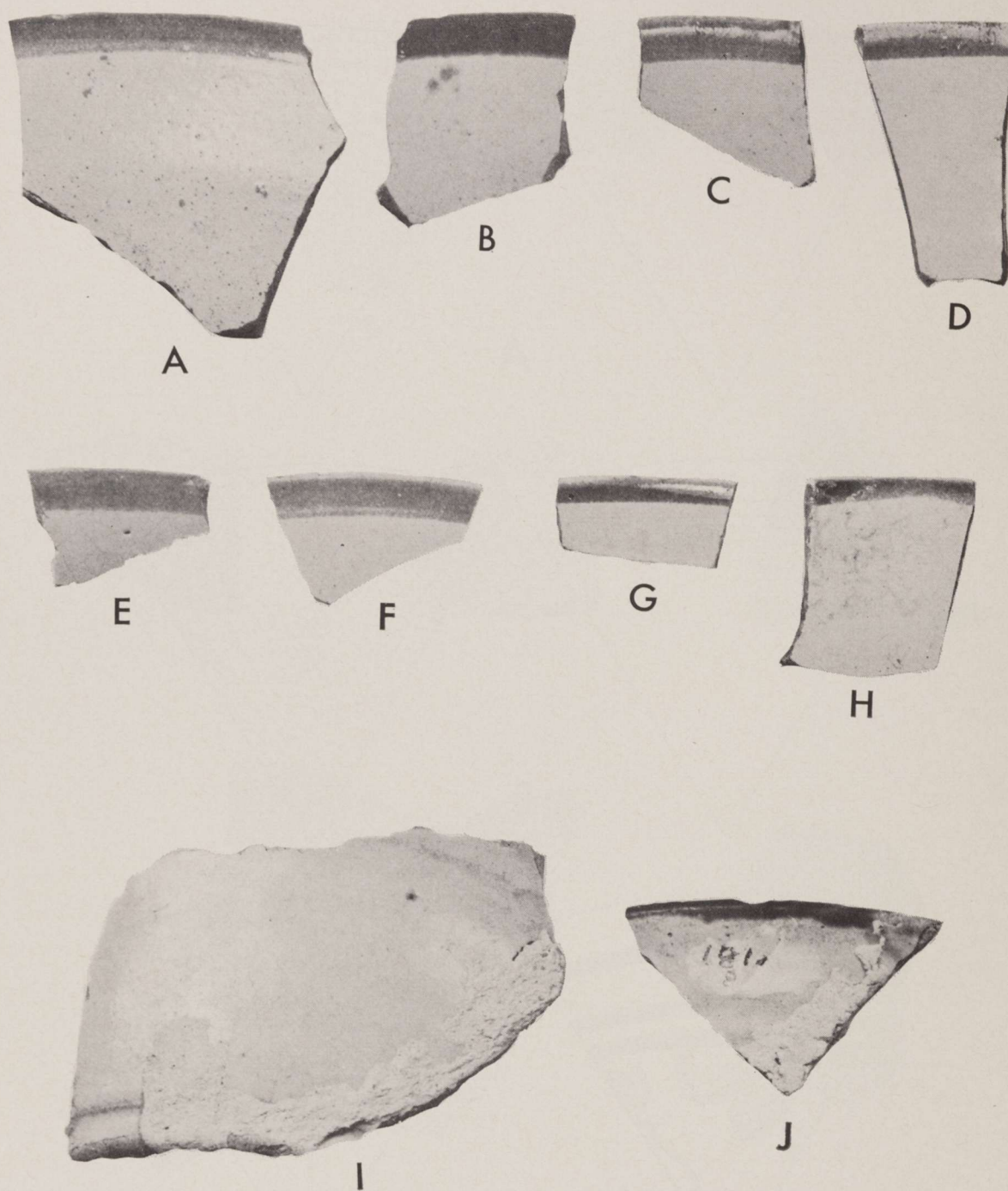


Fig. 51. Ceramics, glossy white majolica. A-H, blue rim on white rim sherds; I, J, plastered majolica sherds.

48, and 50, and the use of colors in connection with design elements is shown in Fig. 53.

Marks: Part of a maker's mark appears in light brown on the exterior of a blue and brown on white basal sherd.

Form—

Shape: Vessel shapes include small cups, bowls, and deep plates.

Rim: Cups have nearly vertical rims, bowls have slightly outcurving rims, plates have broadly flaring flat rims about 3 to 4 cm. in width (Fig. 54). Projected rim diameters range from 8 to 12 cm. on cups and bowls and from 19 to 22 cm. on plates.

Lip: Lips are rounded and slightly thinned on all forms.

Base: Cups, bowls, and plates all have a flat base with a ring foot from about 4 mm. to 7 mm. in height (Fig. 54). The lower edge of this foot is usually worn through the enamel into the paste, either from use or from deliberate grinding to make the vessels sit level. Projected basal diameters range from 4 to 5 cm. on cups and bowls, and from 10 to 12 cm. on plates.

Thickness: Cups range from 2 to 5 mm., bowls from 3 to 6 mm., and plates from 4 to 9 mm. (average about 6 mm.) in thickness. In every case, the thinnest measurement is at the rim and the thickest is at the base.

Appendages: None noted.

Descriptions of comparable ceramics

Barber, 1906a, 1908, 1911 a-b, 1915a; Caywood, 1950: 81–97; Cervantes, 1939; DiPeso, 1953: 218–223; Goggin, 1950; Jelks, 1958: 201–210; Montgomery *et al.*, 1949: 315–316; Plowden, 1958; Smith, 1965; Snow, 1965: 25–35; Toulouse, 1949: 21, 27–28; Tunnell, 1966; Tun-

Fig. 52. Rim, body, and basal sherds associated with majolica color groups.

	light-dark blue/white	blue-brown on white	poly- chrome on white	un- decorated white	blue lip bands/white
Rim sherds	44	38	19	11	54
Body sherds	122	81	28	173	..
Basal sherds	9	3	7	24	..
Totals	175	122	54	208	54

nell and Ambler, 1967. Subsequent to the preparation of this report for publication, several

other publications have been released which describe majolica collections: Gerald, 1968; Goggin, 1968; Gilmore, 1969; Schuetz, 1969.

Provenience. Fig. 55.

Fig. 53. Associations of design elements and colors on majolica sherds.

	Dark blue	Light blue	Dark-light brown	Orange	Yellow	Green
Lip bands	x	x	..	..	..	..
Broad lines	x	..	..	x	x	..
Narrow lines	..	x	x	..	x	..
Overlapped curves and spiral design	..	x	..	..	..	..
FLORAL	Leaves	x	..	x	x	x
	Blossoms	x	..	x	x	x
	Stems	..	x	..	..	..
Outlining	..	..	x	..	..	..

TIN-ENAMELED, DULL WHITE

(Fig. 40, L), 4 sherds

These sherds are probably a European-made majolica or faience ware.

Method of Manufacture

Wheel-turned and kiln fired.

Paste—

Inclusions: Numerous microscopic fragments of a bright red opaque material are scattered throughout the light pink paste. Rounded transparent sand grains, visible to the unaided eye, occur occasionally.

Texture: Very fine-grained and uniform.

Hardness: About 2.0 on Mohs' scale; it is easily cut with a knife.

Color: The color of all the sherds is a uniform shade of light pink.

Surface features—

Finish: The interior and exterior surface are uniformly coated with an opaque tin-oxide enamel which averages about 0.2 mm. in thickness.

Color: The enamel color is pure white and the surface is dull or flat with almost no gloss. This is quite different from the majolica described above which has a high glossy surface.

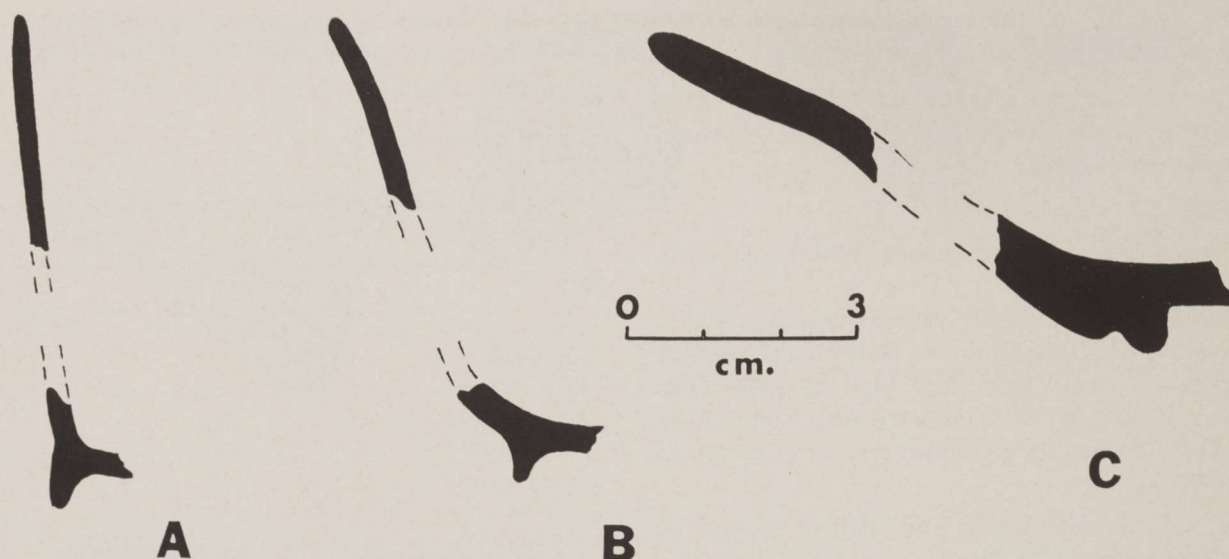


Fig. 54. Cross sections of majolica sherds. A, typical rim and base cross section of deep cup; B, typical rim and base cross section of deep bowl; C, typical rim and base cross section of deep plate.

Hardness: About 6.0. This is somewhat softer glaze than that found on the other tin-enameled earthenware.

Decoration—

Technique: Painting in opaque blue. The color was applied over the white enamel background, but both were fused smoothly together during the firing.

Painting: Dark and light blue paints, probably cobalt derived, where applied very thinly on the white enamel.

Designs: Delicate dots and floral motifs in dark blue are connected by very fine light blue meandering lines. These designs are more delicate than those on the majolica described above. The designs are apparently applied in bands around the rims of vessels, on the interior surface only.

Form—

Shapes: These sherds came from a deep plate.

Rim: The plates had a flaring rim with a concave upper surface (Fig. 40, L).

Lip: Rounded and thickened.

Thickness: Body thickness averages 4 mm. and the lip thickness is 7 mm.

Provenience

All of the sherds were found on the bulldozed surface of the site.

UNIDENTIFIED GLAZE, DARK BROWN APPLIQUÉD WARE (Fig. 40, D and E) 27 sherds

Method of manufacture: Wheel-turned, impressed and appliquéd decorations, kiln fired.

Paste—

Inclusions: Widely scattered soft white lumps up to 1 mm. in diameter, probably are accidental inclusions in the paste.

Texture: Very fine-grained and homogeneous with a smooth, sharp fracture.

Hardness: About 5.0.

Color: The paste is a uniform dark gray, but when refired to 1,500° F. in an oxidizing atmosphere the paste turned a uniform shade of light orange.

Surface features—

Finish: Interior and exterior surfaces of all sherds are coated with an opaque glaze about 0.1 to 0.3 mm. in thickness. This glaze is very glossy and finely-crazed (visible under magnification only). No bubbles are visible.

Color: The glaze is a very dark chocolate brown and is probably a manganese pigment.

Hardness: The glaze has a surface hardness of only about 5.5, and can be easily cut with a knife point.

Fig. 55. Provenience of tin-enameled majolica sherds by color group.

	Dark-Light blue/white	Blue-Brown on white	Polychrome on white	Blue Rim on white	Undecorated white	Totals
Structure 1						
fill	--	--	--	--	--	--
floor	3	--	--	1	2	6
Structure 3						
fill	--	--	--	--	--	--
floor	3	--	--	--	--	3
Structure 4						
fill	--	--	--	--	--	--
floor	--	--	2	--	--	2
Structure 7						
outside	1	1	--	--	--	2
fill	5	7	--	1	2	15
floor	1	--	--	--	1	2
Structure 8						
outside	1	2	--	--	1	4
fill	1	--	--	--	--	1
floor	--	3	--	1	--	4
Structure 10						
fill	1	2	--	--	--	3
floor	--	--	--	--	--	--
Structure 11						
outside	2	--	--	--	--	2
fill	--	1	--	--	--	1
floor	1	--	--	--	--	1
Structure 12						
fill	--	1	--	--	--	1
floor	1	--	--	--	1	2
Structure 13						
fill	--	--	--	--	--	--
floor	4	5	4	--	1	14
Structure 14						
fill	2	--	--	1	1	4
floor	--	2	1	--	2	5
Midden	98	47	30	34	124	332
Gate area	--	--	--	--	1	1
W. Wall area	6	2	--	1	5	14
Surface	45	49	17	15	67	193
Totals	175	122	54	54	208	613

Decoration—

Technique: The exterior surfaces of all sherds show signs of the following decorative techniques: (1) broad, raised, parallel ridges, running horizontally around the vessel, produced by creasing the interior walls of the still-plastic vessel with the fingers or a blunt instrument, and measuring about 1.5 cm. from crest to crest; (2) impressing the surface of the still-plastic clay with highly decorated stamps; (3) broad

bands of appliqué strips which were probably mold-made; (4) dark brown glaze over the other decorations.

Designs: The designs cannot be reconstructed because of the small size of the sherds.

Form—

Shape: Very little can be determined about the vessel shape. It was probably a deep jar or bowl

with a rounded bottom, slightly flared rim, and small, vertical strap handles (1.5 cm. wide and 5 mm. thick).

Thickness: The vessel walls range from 3 to 6 mm. in thickness. Appliqué bands of about the same thickness have been added to the surface of some areas.

Descriptions of comparable ceramics

The vessel or vessels represented by these sherds must have been similar to those illustrated by Mankowitz and Haggard (1957: Plate 104 A & B) and listed as made in the west of England in the late seventeenth century. Similar sherds have been found at Mission Espíritu Santo in Texas (Mounger, 1959: Plate 91-E) where they were identified as "Rockingham Ware."

Provenience. Fig. 56.

HARD PASTE

CLEAR-GLAZED, WHITE
19 sherds

Methods of manufacture

Wheel-turned and kiln fired.

Paste—

Inclusions: None noted.

Texture: Very fine-grained and uniform.

Hardness: About 5.0 to 6.0 on Mohs' scale. Some sherds can be scratched with a knife point with difficulty.

Color: White.

Surface features—

Finish: The interior and exterior surfaces are coated with a clear glaze containing numerous tiny bubbles. The glaze, about 0.2 to 0.4 mm. in thickness, has occasional thick spots in it. It is coarsely-crazed and has a smooth, glossy surface.

Color: The white paste is visible through the transparent glaze.

Hardness: The glaze hardness averages about 7.0.

Decoration—

None.

Form—

Shapes: There are three rim sherds, six basal sherds, and ten body sherds. Three thick, flat body sherds probably are from large, flat-bottomed plates or platters. The remainder of the sherds seem to be from small cups.

Rim: The cups have vertical walls and rims. The projected exterior rim diameter is 7.8 cm.

Lip: The lips are the same thickness as the walls and are rounded.

Base: The cups have ring bases with a foot about 3 mm. high and a projected diameter of 4.6 cm.

Thickness: The plate basal sherds are 7 mm. thick; the cup walls are 5 mm. thick.

Provenience

Three sherds were found in the mission midden and sixteen were found on the surface. Since none of the sherds was found in direct association with the floors of the mission structures, they may represent more recent occupations of the site.

CLEAR-GLAZED, BLUE FEATHER-EDGE

(Fig. 40, K), 3 sherds

Blue and green "feather-edge" or "shell-edge" wares were made in England in the latter half of the eighteenth century and the first half of the nineteenth century, and this popular pattern became very widely spread. Several secondary sources have said that this popular earthenware was in common usage principally after about 1790 (see Descriptions of comparable ceramics below). A recent Wedgwood catalogue lists this type of decorated edgeware as first produced about 1765 and designed by Josiah Wedgwood (Wedgwood Catalogue of Bodies, Glazes, and Shapes Current for 1940-1950, page M). The occurrence of blue feather-edge at Mission San Lorenzo in the 1760's constitutes the earliest occurrence of this ware in North America that this investigator has been able to find recorded. Although it seems very unusual that a plate of this ware, first produced in England in 1765, would have been broken at San Lorenzo before 1770, that apparently was the case (see Structure 13 for statement about provenience).

Method of manufacture

Probably wheel-turned, impressed inner rim, and kiln fired.

Paste—

Inclusions: None noted.

Texture: Very fine-grained and uniform, but not vitrified.

Hardness: About 6.0, cannot be scratched with a knife point.

Color: White.

Surface features—

Finish: Interior and exterior surfaces are uniformly coated with a thin (0.1 to 0.2 mm.) clear glaze. The surface of the glaze is very finely-crazed and glossy.

Color: The white paste shows through the clear glaze.

Hardness: The glaze is about 7.0 hardness, and it can be scratched with quartz with difficulty.

Decoration—

Technique: Clear glaze over white paste with impressed and painted interior rim.

Painting: Blue paint (probably cobalt) was applied over the impressed rim beneath the clear glaze. The paint ranges from dark blue at the edge of the rim and on the lip to light blue at the ragged edge of the design.

Designs: The inner edge of the rim was decorated with a row of shallow, parallel, diagonal, linear impressions. The impressions are about 1 cm. in length and spaced at 3 mm. intervals. Blue paint was applied over this impressed edge in a "feather" design (Fig. 40, K), the spine of the feather represented by the edge of the rim and the edge of the feather extending out on the interior surface slightly past the impressions (about 1.3 cm. maximum). The flat lip of the vessel was painted blue also, but paint does not extend onto the exterior surface. The remainder of the vessel was apparently undecorated.

Form—

Shape: All three sherds are from the rim area of a shallow plate.

Rim: The plate has a flaring rim with a slightly concave upper surface (Fig. 40, K). A projection of the rim curvature indicates a diameter of 23 cm. or about 9 inches for the plate.

Thickness: The body thickness is 4 mm. and the rim thickness about 6 mm.

Descriptions of comparable ceramics

Fairbanks, 1962: 13 and Plate II; McClinton, 1951: 21; Olds, 1962: 196–197; South, 1962: Plate VIII; Watkins, 1960: 299.

Provenience

The association of these sherds with the mission occupation seems certain because: (1) They were found on the floor of Structure 13 beneath fallen roof and wall debris and associated with the usual mission tin-enameled and lead-glazed wares (2) There was no evidence of disturbance on the floor of this structure. (3) No intrusive materials were found on or above the floor in this non-bulldozed structure.

CLEAR-GLAZED, POLYCHROME PAINTED

3 sherds

These three small body sherds will not be described in detail since they were found on the surface and their association with the mission is uncertain. Blue, red, and green pigments are present beneath clear glaze on white paste. Vessel shapes or design elements cannot be determined.

Stoneware

SALT-GLAZED, WHITE

(Fig. 42, C), 1 sherd

This type of fine quality stoneware was produced in Staffordshire, England, primarily in the first half of the eighteenth century (Barber, 1906 b and c: 18–19, Plate facing Page 17).

Method of manufacture

Wheel-turned body with an impressed rim decoration, kiln-fired.

Paste—

Inclusion: None noted.

Texture: Fine-grained and vitreous with smooth, glassy fracture. Very small, elongated gas cavities are common in the paste, but do not show on the surface.

Hardness: About 6.0. It cannot be scratched with a knife.

Color: Very light tan.

Surface features—

Finish: Interior and exterior surfaces are covered with a thin, uniform salt glaze. The glaze consists of a thin, transparent coating, containing some tiny heat bubbles, which has an uneven surface often described as resembling the surface of an orange peel. The glaze is produced by throwing salt into the kiln when the heat is intense. The salt vaporizes, settles on the surface of the vessel, and acting as a flux, produces the thin, glossy, transparent coating (Barber, 1906C: 5). The surface shows no signs of crazing.

Color: The very light tan paste shows through the transparent glaze. Although this ware is called "white salt-glazed stoneware," it apparently is usually a very light tan or gray in color.

Hardness: About 6.5.

Decoration—

Technique: The flaring rim of a wheel-thrown vessel was pressed into a clay mold or metal die, and the design of the mold was clearly impressed into the plastic clay of the vessel.

Design: The design (Fig. 42, C) consists of a regular pattern of sinuous parallel lines which form lozenge-shaped elements. The design is contained in adjacent panels outlined by parallel border lines. It was restricted to the interior rim surface of the vessel represented by this sherd.

Form—

Shape: This sherd came from the shoulder area of a deep plate with a flat, flaring, decorated rim.

Thickness: A uniform 4 mm.

Description of comparable ceramics

Barber, 1906 b and c; South, 1962: Plate III; Maxwell and Binford, 1961: 93; Tunnell and Ambler, 1967: 43–45.

Provenience

This sherd was found on the floor of Structure 11.

SALT-GLAZED, BROWN

7 sherds

These sherds all seem to be part of a single "ginger beer bottle." These beverage bottles, most of which originated in Scotland, were very commonly imported into the United States in the latter half of the nineteenth century (Cecil Calhoun, personal communication). Since these

sherds are not definitely mission-associated, they probably show where someone drank a bottle of ginger beer among the mission ruins at a much more recent time.

Method of manufacture

Wheel-turned and kiln-fired.

Paste—

Inclusions: None visible.

Texture: Vitreous with a glassy fracture, and containing numerous small, elongated gas cavities.

Hardness: About 6.5. It cannot be scratched with a knife point.

Color: Very light tan.

Surface features—

Finish: Interior and exterior surfaces, except for the exterior bottom, are covered with a thin salt glaze. The upper portion of the bottle was coated with a brown glaze beneath the clear salt glaze. The glaze contains numerous tiny bubbles and has a rough, pitted but glossy surface. Parallel striations in the clay, made by tools during the manufacturing of the bottle, show through the glaze in many places.

Color: The upper portion of the bottle has a soft tobacco-brown colored glaze beneath the clear glaze; on the lower part of the bottle, the light tan paste shows through the transparent salt glaze.

Hardness: The glaze has a surface hardness of about 6.5 to 7.0—it can be scratched with quartz with difficulty.

Decoration—

About the upper one-half of the bottle was coated with a thin, brown glaze beneath the salt glaze. No other decoration is present.

Form—

All of the sherds are from a tall, slender bottle with a flat base, vertical body walls and a neck which gradually slopes inward toward the lip. The exterior diameter at the base is 7.2 cm. The thickness ranges from 1 cm. at the base to 5 mm. at the neck. There are no rim sherds.

Descriptions of comparable ceramics

Olds, 1962: 204, 205; Cecil Calhoun, personal communication.

Provenience

These sherds were found together outside of Structure 2 and just beneath the bulldozed surface.

SALT-GLAZED, BLUE
2 sherds

These two small body sherds were both found on the surface and could be from any one of the several occupations of the site. They have a dull blue paint under a salt glaze, with the characteristic rough finish, applied over a light tan paste. Vessel size or shape cannot be determined.

Porcelain

Two sherds of modern American porcelain from a recent occupation of the site were found on the surface.

ORIENTAL
7 sherds

These sherds probably are from fine oriental porcelain vessels. Fragments of such vessels have been commonly found at Spanish colonial sites in North America (see description of comparable ceramics below).

Method of manufacture

Wheel-turned and kiln-fired.

Paste—

Inclusions: None noted.

Texture: Vitreous and uniform with a sharp, glassy fracture. No gas cavities are evident in the paste. The sherds are translucent against a strong light.

Hardness: About 6.5 to 7.0.

Color: White to very light blue-gray.

Surface features—

Finish: Interior and exterior surfaces are uniformly coated with a thin, clear to milky-white glaze. The glaze contains numerous tiny bubbles which do not open onto the surface which is glossy and not crazed.

Color: Milky-white to very light blue-gray.

Hardness: The surface hardness is about 7.0. It can be scratched with quartz with great difficulty.

Decoration—

Technique: Glazed surface with either underpainting or overpainting.

Painting: Three sherds have a thin, orange-red paint applied over the glaze. This paint can be scratched with a knife point only with great difficulty. Three sherds have a dark to light blue paint applied beneath the glaze. This pigment fused into the glaze during the firing.

Designs: The orange-red surface paint is used for fine floral design and was applied in bold smooth strokes. The blue underglaze paint is used for broad curving lines and rather thick leaf designs composed of straight parallel elements arranged on a stem. All of these are body sherds so there is no information on rim decorations.

Form—

Thickness: 3 to 5 mm.

Descriptions of comparable ceramics

DiPeso, 1953: 227; Toulouse, 1949: 21; Deetz, 1963: Plates 5 and 8; South, 1962: Plate 4. In addition, similar porcelain sherds occur at various Spanish colonial sites in Texas (Fig. 57).

Provenience. Fig. 56.

CERAMIC DISCS
(Fig. 40, A, B), 3 sherds

All three of these artifacts are made from amber, lead-glazed, plain earthenware. The sherds are shaped into more or less round discs with smoothed edges, and they show signs of wear on all surfaces. All three discs are approximately the same size: 3 cm. in diameter and 9 mm. in thickness. Almost identical sherd discs, one made of majolica and eleven made of Goliad plainware, are illustrated by Mounger (1959, Plates 38 and 39-A) from Mission Espiritu Santo, and others are mentioned in the text (Mounger, 1950: 175). Similar ceramic discs of a comparable size are reported by DiPeso, 1953: 146; Toulouse, 1949: 22.

Fig. 56. Provenience of various types of ceramics.

Provenience Unit	Wheel-made unglazed red slipped ware	Tin- enameled dull-white ware	Dark brown appliquéd ware	Hard-paste white ware	Hard-paste blue feather- edge	Hard-paste polychrome painted	Stoneware white salt glaze	Stoneware brown salt glaze	Stoneware blue salt glaze	American porcelain	Oriental porcelain	Totals
Structure 2 outside	1	--	--	--	--	--	--	7	--	--	--	8
Structure 7 fill	--	--	7	--	--	--	--	--	--	--	--	7
Structure 8 floor	7	--	--	--	--	--	--	--	--	--	--	7
Structure 11 floor	--	--	--	--	--	--	1	--	--	--	--	1
Structure 12 floor	1	--	1	--	--	--	--	--	--	--	--	2
Structure 13 floor	7	--	1	--	3	--	--	--	--	--	--	11
Midden	14	--	8	3	--	--	--	--	--	--	1	26
W. Wall Area	1	--	--	--	--	--	--	--	--	--	--	1
Surface	17	4	10	16	--	3	--	--	2	2	6	60
Totals	48	4	27	19	3	3	1	7	2	2	7	123

CERAMIC SCRAPERS (Fig. 40, C), 2 sherds

Two sherds, both from below the surface in the midden, have heavily worn edges which apparently were used for a scraping purpose. The abraded edges are slightly convex and are 3.5 cm. and 5.0 cm. in length. One sherd is amber, lead-glazed, plainware and the other is non-wheel-made, red slipped plainware. These sherds must have served for a long or strenuous task because to produce similar wear on similar sherds it was necessary to rub them vigorously on a rough concrete surface for many minutes.

Ceramic Comparisons

A cursory examination of large ceramic samples from other Spanish colonial sites in Texas (Fig. 57) shows the following interesting facts about the decorated wares:

(1) Excavations of the probable location of Presidio de Nuestra Señora de Loreto (1722-1726) on the site of La Salle's Fort St. Louis on the Texas coast, produced thousands of blue on white majolica sherds like those from San Lorenzo. This earlier site has none of the blue and brown on white majolica sherds or the polychrome on white sherds which are commonly found at San Lorenzo and other later sites.

(2) Excavations at the third location of Mission Espíritu Santo de Zuñiga (1749 to about 1830) and Mission Nuestra Señora del Rosario (1754 to about 1808), both near the city of Goliad, Texas, produced large ceramic collections. The collections contain most of the same types of ceramics found at San Lorenzo, as well as many additional (probably later) types of majolica such as polychrome on blue, bright crude polychrome (orange, yellow, green) on white, and a rather sloppy blue rim on white majolica which has the blue applied in a large sawtooth design, possibly made in imitation of blue feather-edge. These sites, which were occupied later than San Lorenzo, also produced a wide variety of hard-paste European earthenwares such as direct painting, transfer printed, and edged wares.

(3) Surface collections and excavated samples from Spanish colonial house sites in the Falcon Reservoir area on the Rio Grande (mostly late eighteenth century and early nineteenth century) contain some of the same ceramic types found at San Lorenzo, but they contain a larger percentage of the later, and somewhat cruder, bright polychrome majolica mentioned above.

(4) The brown painted, lead-glazed earthenware found at San Lorenzo does not occur at the earlier site of Fort St. Louis, but it is rather common in all of the other Spanish colonial collections examined. In the later sites such as Mission Espíritu Santo and especially in the house sites at Falcon, there is a similar ware also present in large quantities—a

Fig. 57. Ceramic comparisons.

Estimated sherd count	20,000	3,400	10,000	5,000	500	500	500
	Presidio de N.S. de Loreto—Ft. St. Louis	Mission San Lorenzo de la Santa Cruz	3rd Location Mission Espíritu Santo de Zuñiga	Mission N.S. del Rosario	Falcon Site 78-B9-5	Falcon Site A	Falcon 10 minor sites
Polychrome polished ware	X	X	X	X	X	X	X
Dark red polished plainware		X	X	X			
Red polished decorated ware	X	X	X	X	X	X	X
Red slipped plainware		X					
Dark gray plainware		X					
Unglazed, red slipped plainware		X					
Lead-glazed, amber, plainware		X					
Lead-glazed, amber, noded ware		X					
Lead-glazed, clear, brown painted		X	X	X	X	X	X
Lead-glazed, green, olive jars	X	X	X	X			
Tin-enameled, majolica B/W	X	X	X	X	X	X	X
B-Br/W		X	X	X	X	X	X
B-rim/W	X	X	X	X	X	X	X
Poly./W		X	X	X	X	X	X
W	X	X	X	X	X	X	X
Unidentified glaze, dk. brown appliqué		X	X				
Hard-paste, clear glaze, white		X	X	X		X	X
Hard-paste, clear glaze, blue feather-edge		X	X	X			
Hard-paste, clear glaze, poly-painted		X	X	X		X	X
Stoneware, salt glaze, white		X	X				
Porcelain, oriental, blue underglaze	X	X	X	X			
Porcelain, oriental, red overglaze		X	X	X			
Tin-enameled, majolica, poly/lt. blue			X	X			
Tin-enameled, majolica, crude poly/W			X	X	X	X	X
Tin-enameled, majolica, sawedge B/W			X		X	X	X
Lead-glazed, clear, poly-painted			X	X	X	X	X

polychrome painted (brown, yellow, and orange), lead-glazed ware which is made in the same manner and same vessel shapes as the brown painted ware found at San Lorenzo.

(5) Two of the highly polished, nonwheel-made types of pottery, described at Mission San Lorenzo, occur in small quantities at all the other Spanish colonial sites examined. This pottery, probably brought from somewhere in Central Mexico, must have been popular with either the Spaniards or their Indian servants.

Glass

Pale green bottle glass (31 sherds)

This transparent glass is a pale, dull green. According to Lardner (1832: 151), the green color of common bottle glass "is owing to the presence of a portion of iron in the sea sand, and,

probably also, in the vegetable ashes of which it is composed." It contains numerous small bubbles throughout, none of which opens onto the surface. Bubbles near the exterior (convex) surface of the glass tend to be elongated while those near the interior (concave) surface are more spherical. Some sherds have only very slight patina on the surface, but most of them are heavily patinated. The patina ranges from off-white to golden in color and has a mottled red/green lustre when viewed at an angle toward a strong light. The patina is smooth and hard but it can be flaked from the glass with a needle or knife point. All of the sherds are apparently from hand-blown bottles—there are no mold marks. The thickness is variable, ranging from 2 to 5 mm. with almost the entire range found on some large sherds.

The largest fragment is a complete bottle neck

(Fig. 58, E), 12 cm. long. Its smoothly sloping shoulder has a long, narrow neck tapered in slightly toward the lip, which is straight and smoothly finished. A narrow band of glass about 1.2 cm. wide and 2 mm. thick has been added around the exterior of the neck just below the lip. This reinforcing band is smoothly polished onto the bottle neck. The exterior diameter ranges from about 6 cm. on the slope of the shoulder to 2.9 cm. near the lip. There are no mold marks on this fragment.

Pale green flat glass (8 sherds)

The color and transparency of these pieces match those of the bottle glass described above. A few widely scattered, small bubbles are visible, all of which are elongated. The surfaces of the sherds are very smooth and flat and the thickness on each sherd except one is uniform. One sherd is 1 mm. thick, two are 2 mm. thick, and the others are 4 mm. thick. All are heavily patinated and the patina ranges from off-white to brownish-gold in color. Although the patina is hard and smooth, it can be scraped and cut with a knife point. One sherd has been broken into the shape of one-quarter of a circle and the edges are ground smooth. The radius of this fragment is 3 cm. Possibly it was used as an inlay or one element in a leaded glass panel. The other flat glass sherds may be fragments of square bottles or flat panes.

Colorless glass (2 sherds)

Two sherds of a small, thin-walled vessel were found in the midden, its glass colorless and transparent with a few widely scattered, small, spherical bubbles. The surface is coated with a layer of white patina which has a pearly lustre in bright light. The vessel was a small glass with vertical sides and a straight, smooth lip. There are no mold marks. The sherd thickness is rather uniform 2 mm. The estimated diameter of the complete vessel, at the lip, is 6.5 cm.

Pale blue-green bottle glass (23 sherds)

A pale aquamarine is the color of these transparent sherds, containing a few tiny, spherical bubbles. All sherds are heavily coated with a dull white, chalky patina and all are from small bottles (Fig. 58, D), with no mold marks visible. Thickness ranges from 1 mm. to 6 mm., and is variable on each sherd. The only large sherd is a

bottle neck fragment which has a sloping shoulder and a short, vertical neck with a slightly thickened, rounded lip. A thin (less than 0.5 mm.) flap of glass was folded down from the lip and smoothed tightly against the upper 4 mm. of the inner neck surface. The neck of the bottle was 1.8 cm. long and had an estimated exterior diameter of 2 cm. at the lip. These sherds were found on the surface and just beneath the surface outside Structure 2. Their association with the mission occupation is uncertain.

Recent bottle glass (89 sherds)

These sherds are of recent origin and a variety of colors: white, dark brown, dark green, colorless. Some have trade names such as "Lea & Perrins." One molded dark green whiskey bottle (21 sherds), with a hand-finished neck, (Fig. 58, B and C) was found in a disturbed area on the floor of Structure 8. This bottle probably dates to the Camp Wood occupation in the mid-nineteenth century.

Beads

In the comparatively small collection of 132 beads from San Lorenzo there are twelve distinct types. Four types not commonly reported in North American historic sites are included—amber, alabaster, red coral, and pearl—although glass beads comprise the bulk of the collection.

Glass beads, the most frequently found type of artifact in many historical sites, have seldom been described or illustrated sufficiently for purposes of intersite comparisons. With more than 80 per cent of these specimens unquestionably associated with the mission occupation, i.e., in burials or on house floors (Fig. 61), this dated sample from a restricted time period—1762 to 1771—is described in detail for comparison by other investigators.

GLASS BEADS

The glass beads found at the site of Mission San Lorenzo undoubtedly originated in the Republic of Venice, which held a tight monopoly on the glass bead industry at that time. So carefully guarded were secrets of the industry that as late as 1762 a local law forbade glassmakers to go abroad on pain of having their families in Venice imprisoned; and, "... if in spite of the imprison-



Fig. 58. Bottle fragments. A, base of dark green wine bottle; B, neck of dark green, mold-made whiskey bottle; C, base of dark green, mold-made whiskey bottle; D, neck of pale blue-green bottle; E, neck of pale green wine bottle.

Fig. 59. Provenience of glass.

	Pale green bottle	Pale green flat	Colorless glass	Pale blue-green bottle glass	Recent bottle glass
Structure 2					
outside	5	--	--	17 (one bottle)	10
floor	1	--	--	--	--
Structure 3					
floor	1	--	--	--	--
Structure 7					
fill	2	1	--	--	2
floor	--	--	--	--	--
Structure 8					
outside	--	--	--	--	1
floor	2	--	--	--	21 (one bottle)
Structure 11					
floor	--	1	--	--	--
Structure 13					
floor	--	1	--	--	--
Structure 14					
fill	--	2	--	--	--
floor	--	1	--	--	--
Midden	6	--	2	--	--
W. Wall Area	--	--	--	1	1
Surface	12	2	--	5	54
Totals	31	8	2	23	89

ment of his relations he should persist in remaining abroad, an emissary will be charged to kill him" (Sauzay, 1871: 45). At least sixty different kinds of glass beads were manufactured in large quantities at Venice and the nearby island of Murano. Lardner (1832: 183-184) states that "... the principal trade in these is carried on with Spain and the coast of Africa; but some portions find their way to nearly all parts of the world." The Venetian monopoly lasted until late in the nineteenth century (Scientific American Supplement: May, 1900: 20400).

All the glass beads from San Lorenzo are the *hollow-cane* variety, made in the following manner: (1) A cylindrical mass of molten glass containing a large central bubble was drawn out to form a long, thin tube or cane. (2) When cool, this cane was broken into cylindrical bead-size fragments. (3) The fragments were stirred in a mixture of ash and sand until the holes were filled. (4) This mass was heated and stirred until the edges of the cylindrical fragments were

smoothly rounded. (5) The completed beads were cleaned and size-graded with a sieve.

The San Lorenzo specimens are all either *simple hollow-cane* (made of a single layer of glass) or *compound hollow-cane* beads (made of two or more concentric layers of glass) (Edward B. Jelks, personal communication). Although hollow-cane type beads are basically cylindrical, many terms have been used in the literature to describe the slight variations in form which are largely caused by temperature and/or time involved in the fourth step of the manufacturing process.

Additional details about glass bead manufacture are found in: Lardner, 1832: 182-183; Orchard, 1929: 82-88; Sauzay, 1871: 205-206; Scientific American Supplement: May, 1900: 20400; Harris and Harris, 1967. Terminology employed in the following descriptions follows in part that proposed by Duffield and Jelks (1961: 41).

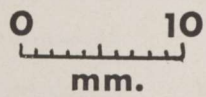
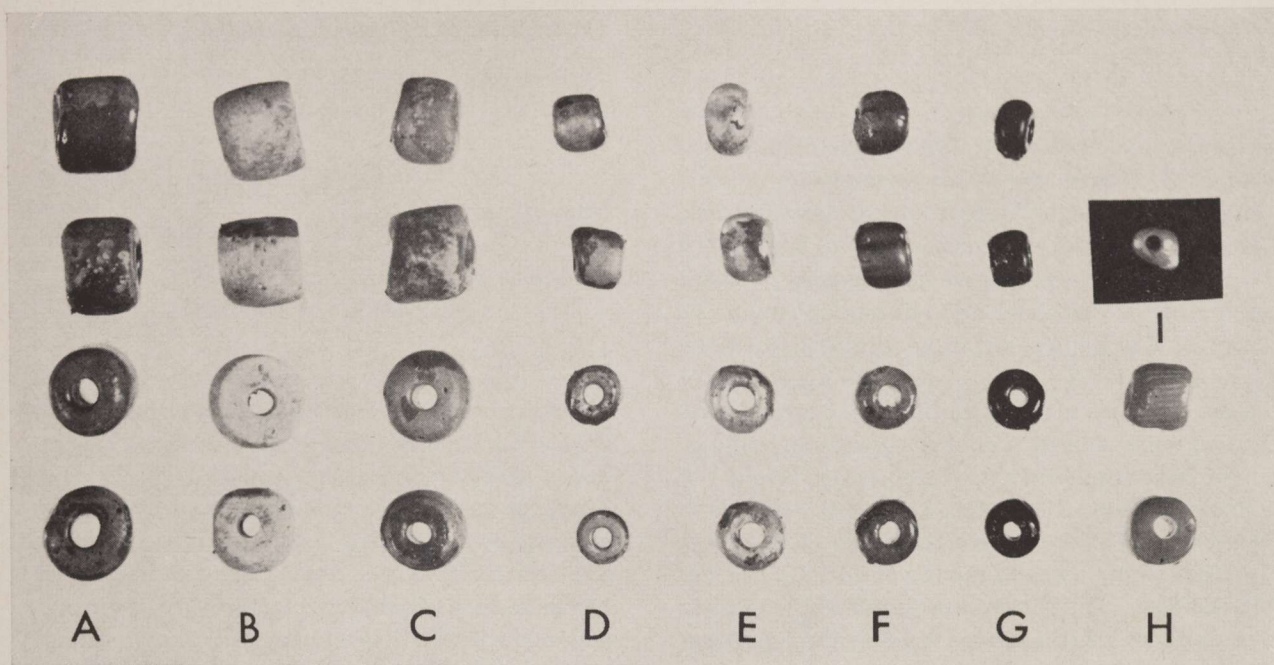
The glass beads from San Lorenzo fall readily into three distinct size groups—large, about 9 mm. in diameter; medium, about 5 mm. in diameter; small, about 3 mm. in diameter—with no graduation between groups. All sizes were apparently used for necklaces (see burial associations). In examining them microscopically (30X), one or more specimens of each type were broken to determine their internal structure and characteristics. A vernier caliper was used for measurements.

MEDIUM-SIZE, COMPOUND, RED BEADS (Fig. 60, A), 29 specimens

Description

Short and cylindrical; most are slightly asymmetrical. End edges of all specimens well rounded and coated with an opaque white patina which flakes away easily with washing or dry brushing, leaving a smooth outer surface.

Fig. 60. Glass beads and plant remains. A, medium-size compound red beads; B, alabaster beads; C, medium-size, simple, blue-green beads; D, small-size compound, red beads; E, small-size, simple, clear beads; F, small-size, simple, blue beads; G, small-size, simple, dark burgundy red beads; H, coral beads; I, pearl bead; J, seeds of a prickly pear cactus (*Opuntia* sp.); K, L, charred corn grains from Structure 10; A-H, upper scale; J-L, lower scale.



Components

Composed of four layers: (1) a thin (about 0.2 mm.) outer layer of translucent pale green glass with no visible bubbles; (2) two identical superimposed, opaque red layers (sometimes appearing to be a single layer), each about 0.1 mm. thick and seeming to contain no bubbles; (3) a translucent pale green core layer averaging about 1.4 mm. in thickness and containing chains or lines of tiny bubbles running parallel to the hole. The green layers are probably the same type of glass used in making eighteenth century pale green wine bottles. A gold or copper-derived pigment was frequently used to produce bright red glass (Lardner, 1832: 210–215). The red glass in these beads probably contains one of these expensive pigments, and the use of very thin layers of red over a thick green core enabled the makers to produce a brilliant red bead with a minimal expenditure of the red pigment.

Dimensions

Diameter 4.3 to 5.3, average 5.0 mm.; length 3.3 to 4.5, average 4.0 mm.; hole diameter 1.2 to 1.5, average 1.3 mm.

Description of comparable beads

Comparable to those called "Cornaline d'Aleppo" by Duffield and Jelks, 1961: 49 (medium-sized, clear/red/green, oblate beads); probably also like the short specimens shown in Pratt, 1961: #72; Watt and Meroney, 1937: 54–55; and Watt, 1937: 64, #82; Harris, *et al.* 1965: 313, #51, #55; Harris and Harris, 1967: 147, #86, #99.

Provenience. Fig. 61.

SMALL-SIZE, COMPOUND, RED BEADS
(Fig. 60, D), 6 specimens

Description

Identical to medium compound red beads described above, except for size and probably manufactured by the same process.

Dimensions

Diameter a uniform 3 mm.; length 2.6 to 3.2, average 3.0 mm.; hole diameter 0.8 to 0.9 mm.

Description of comparable beads

(See medium compound red above) Harris *et al.* 1965: 313, #51; Harris and Harris, 1967: 147, #87.

Provenience. Fig. 61.

MEDIUM-SIZE, SIMPLE, BLUE-GREEN BEADS
(Fig. 60, C), 4 specimens

Description

Short, cylindrical, and rather asymmetrical in shape. Three have well rounded edges; the remaining specimen has sharp, angular edges. Made of one layer of light, translucent blue-green glass containing many bubbles which pit the surface. Two specimens have a bubble about 1 mm. in diameter opening onto exterior surface, and surfaces of all specimens are coated with an opaque white patina which can be easily flaked away.

Dimensions

Diameter 4.5 to 5.0 mm.; length 3.3 to 4.3 mm.; hole diameter 1.1 to 1.5 mm.

Description of comparable beads

Duffield and Jelks, 1961: 44 (medium-sized robin-egg blue, subcylindrical beads); Pratt, 1961: #66; Watt, 1937: 66, #114; Harris, *et al.* 1965: 309, #10; Harris and Harris, 1967: 152, #138.

Provenience. Fig. 61.

SMALL-SIZE, SIMPLE, BLUE BEADS
(Fig. 60, F), 16 specimens

Description

Short, cylindrical specimens with well rounded edges, composed of a single layer of dark blue translucent glass. Unlike the other blue specimens, these have very few visible bubbles in the glass, leaving the surface smooth and only slightly frosted (no heavy patina).

Dimensions

Diameter 3.3 to 3.5 mm.; length 2.3 to 2.9 mm.; hole diameter 1.2 to 1.3 mm.

Description of comparable beads

Harris, *et al.* 1965: 313, #48; Harris and Harris, 1967: 144, #48.

Provenience. Fig. 61.

SMALL-SIZE, SIMPLE, DARK BURGUNDY RED BEADS
(Fig. 60, G), 33 specimens

Description

Very short, cylindrical (doughnut-shaped), with well rounded edges, appearing to be opaque dark brown or black, but freshly broken slivers examined against a strong light show them to be a deep burgundy red. Composed of a single layer of glass with a few chains of bubbles running parallel to the hole. None was patinated—surfaces smooth and slightly frosted.

Dimensions

Diameter 2.8 to 3.5, average 3.1 mm.; length 1.8 to 2.3, average 2.0 mm.; hole diameter about 1 mm.

Description of comparable beads

Duffield and Jelks, 1961: 45 (small and medium, purple-black, doughnut-shaped beads); Pratt, 1961: #84; possibly like Watt, 1937: 66, #126; Harris, *et al.* 1965: 313, #50 (?); Harris and Harris, 1967: 144, #50 (?).

Provenience. Fig. 61.

SMALL-SIZE, SIMPLE, CLEAR BEADS
(Fig. 60, E), 20 specimens

Description

Short, cylindrical beads—some might be called doughnut-shaped, edges well rounded. Made of a single layer of translucent glass with few visible bubbles, the surface is smooth, slightly frosted, and has some patches of an opaque patina. The central hole, visible through the wall of each bead, gives these specimens a distinctive opalescent lustre.

Dimensions

Diameter 3.3 to 4.0 mm., average 3.8 mm.; length 2.1 to 3.1 mm., average 2.8 mm.; hole diameter averages about 1.0 mm.

Description of comparable beads

Duffield and Jelks, 1961: 46 (small, translucent, colorless, doughnut-shaped beads); Smith, 1960: 141 to 143, reports small colorless beads which may be comparable to these; Watt, 1937: 62, #22; Harris, *et al.* 1965: 313, #49; Harris and Harris, 1967: 144, #49.

Provenience. Fig. 61.

SMALL-SIZE, COMPOUND, WHITE BEADS,
6 specimens

Description

Short and cylindrical, with well rounded edges. Some small chains of bubbles open onto the bead surfaces; ends are heavily pitted by bubbles. Surfaces are partially coated with an opalescent white patina. Hole is not centrally situated on some specimens.

Components

Two layers were used: (1) a thin outer layer of clear, transparent glass containing some chains of bubbles paralleling the hole, average thickness about 0.1 mm.; (2) a core component of opaque white glass containing a very large quantity of bubbles and probably pigmented with a phosphate of lime (Lardner, 1832: 217). Because of the excessively bubbly nature of the white glass core, the clear glass coating may have been added for durability.

Dimensions

Diameter 3.0 to 3.5 mm.; length 2.5 to 2.9 mm.; hole diameter averages about 0.7 mm.

Descriptions of comparable beads

Duffield and Jelks, 1961: 46 (small, clear/white, subcylindrical beads); Ray and Jelks, 1964: 130; also possibly like beads shown in Pratt, 1961: #110; Smith, 1953: 45 (white, milky, opaque); Harris, *et al.* 1965: 312, #45; Harris and Harris, 1967: 144, #45.

Provenience. Fig. 61.

AMBER BEADS

Amber, fossilized resin of long-disappeared conifer forests, occurs in some alluvial soils in Eu-

rope and Asia and is especially abundant on the beaches along the Baltic Sea. It is highly translucent, soft, takes a high polish, and its colors range from yellow or pale pink to light brown. If rubbed briskly, a piece of amber will become electrified and attract bits of paper. These five beads are probably of European origin.

Description

These specimens are so heavily weathered that only one bead is sufficiently complete for detailed description. It is cylindrical but not perfectly circular in cross section as there are flattened areas on its sides. It has flattened ends, rounded edges, and a well smoothed and frosted surface. The hole is a uniform diameter throughout, apparently drilled from one end only. The amber is heavily laced with cracks which render it rather opaque, but small detached fragments of the amber, a light pinkish brown, are transparent. The amber is easily cut and scratched with a knife blade.

Dimensions

Diameter 4.0 mm.; length 4.5 mm., hole diameter a uniform 1.0 mm. Incomplete specimens were apparently of approximately this same size.

Description of comparable beads

Casanowics (1909: 354) mentions rose tinted amber used for beads in a Roman catholic rosary. Webster's New International Dictionary (second edition, unabridged, 1951) mentions the use of amber for beads.

Provenience. Fig. 61.

ALABASTER BEADS (Fig. 60, B)

A very fine-grained, compact, non-crystalline form of gypsum was used to fashion these beads, which are white to dark pink, with fine, irregular banding visible under magnification. Although alabaster has long been used for statuary, small vessels, and other ornamentation, a specific reference to its use for beads has not been found. Webster's New International Dictionary also uses the word alabaster for a compact, banded form of calcite. Orchard's mention (1929: 34) of calcite beads from Jamaica may refer to beads

similar to these eight specimens from San Lorenzo.

Description

Generally cylindrical in shape, but slightly irregular in cross section. Various flattened areas are present on the well smoothed and highly polished surface. Ends are straight to slightly concave, edges are sharply defined. The holes, frequently not exactly centered, are smooth, straight, and are of uniform diameter.

Dimensions

Diameter 4.2 to 5.0 mm.; length 3.8 to 4.3; hole diameter is a uniform 1 mm. on all specimens.

Provenience. Fig. 61.

CORAL BEADS (Fig. 60, H)

A thorough examination and comparison with specimens of red "precious" coral (*Corallium nobile*) from the Mediterranean reveals these beads to be made of that material. This occurrence of true coral in good association (Fig. 61) with Mission San Lorenzo in the 1760's is somewhat earlier than the first well-documented occurrence of this material in the Southwest. In an article on the use of coral, Clara Lee Tanner (1950: 124-125) states:

The red and red-orange coral of the Southwest tribes of the United States Indians, originated off the coast of Sardinia and on the banks off Sciacca, Sicily. It was manufactured in Torre del Greco in the Province of Naples, as well as in Leghorn, Italy. As to the time this material was sent into the Southwest, we regret our inability to give you any information. It was shipped by manufacturers from the above centers in Italy in the early 1800's, while coral concerns in the United States started late in that [the nineteenth] century.

The statement regarding the shipment of coral in the early 1800's would fit in with the first known date for the existence of real coral in the Southwest [Feb. 6, 1822], recently published by Arthur Woodward [1947: 25-26]. Shipment [of red coral] from the Mediterranean via Mexico is reported, but remains a question (Tanner, 1950: 130).

It is quite probable that the coral beads from San Lorenzo came via Mexico and answer the above question insofar as the Texas frontier is con-

cerned. This red coral has long been used for jewelry and beads and it is highly prized by the modern Southwestern Indians.

Description

Cylindrical, with flattened ends and rounded edges. Surfaces well smoothed and polished to a high gloss, but parallel ridges found on original coral stems are visible on bead surfaces running parallel to the hole. This indicates that the beads are simple short sections broken from the small round coral stems, polished, and perforated. Holes are centrally situated and of a uniform diameter. Color is a brilliant red-orange similar to 1-J-12 in Maerz and Paul (1930).

Dimensions

Diameter 3.5 to 4.0 mm. (the same as the finer stems on the coral specimens used for comparison); length 2.8 to 3.7 mm.; hole diameter a uniform 1 mm.

Provenience. Fig. 61.

PEARL BEAD (Fig. 60, I)

This tiny, eccentric specimen could have been taken from a local Nueces River mussel and perforated, although it is not definitely known whether it is from a salt or fresh water mollusk. Orchard (1929: 29) discusses the use of pearls from fresh water mussels as beads, and Harring-

ton (1922: 250) illustrates some tiny, eccentric fresh water mussel pearl beads from aboriginal sites in the eastern United States. Although pearls have long been highly prized as beads, they are unreported from Spanish colonial sites in Texas or the Southwest.

Description

Eccentric in shape, smooth but undulating surface, opaque white with brilliant, iridescent gleam. Hole is circular and of uniform diameter throughout.

Dimensions

Length 2.9 mm., width 2.1 mm., thickness 1.8 mm., hole diameter 0.8 mm.

Provenience. Fig. 61.

Worked Stone

In addition to its use as a construction material, stone was utilized in the manufacture of a variety of tools at San Lorenzo. All of the stone artifacts and debitage are locally occurring cherts and limestone with the exception of three metate and mano fragments of vesicular basalt and a pipe made of an unidentified igneous material. The local cherts occur in nodular form in the limestone and are abundantly represented in the river gravels. The chert ranges from light reddish brown to tan to medium gray in color,

Fig. 61. Provenience of beads.

Provenience Unit	Glass Beads								Amber	Alabaster	Coral	Pearl	Totals
	Medium com- pound red	Small com- pound red	Small compound white	Large simple blue	Medium simple blue-green	Small simple blue	Small simple burgundy red	Small simple clear					
Burial 1	--	--	--	--	--	--	28	--	1	--	--	--	29
Burial 4	--	--	--	--	--	--	--	17	--	2	1	--	20
Burial 8-1	29	6	--	--	4	7	--	--	--	--	1	--	47
Burial 10	--	--	--	--	--	2	--	--	--	5	--	--	7
Structure 13, floor	--	--	2	--	--	1	--	--	--	--	1	--	4
Structure 4, floor	--	--	--	--	--	--	--	--	3	--	--	--	3
Structure 7, fill	--	--	--	--	--	--	--	--	1	--	--	--	1
Midden	--	--	3	--	--	5	5	3	--	1	--	1	18
Surface	--	--	1	1	--	1	--	--	--	--	--	--	3
Totals	29	6	6	1	4	16	32	20	5	8	3	1	132

with broad banding and mottling occurring commonly. Chert river cobbles, usually coated with a thick, patinated cortex, were probably utilized by the knappers at San Lorenzo. None of the flakes or tools made at the mission show traces of patina on the freshly broken surfaces, but flakes and tools from nearby prehistoric sites are almost all coated with light to heavy white patina.

Only those stone artifacts and bits of chipping debris which were found in the excavations or on the disturbed surface in the immediate area of the mission structures are included in this analysis. Surface collections from nearby prehistoric sites have been excluded. The worked stone described below has the same general pattern of distribution as the Spanish colonial artifacts at the site, and most of this material is assumed to have been associated with the mission occupation. Since closely dated lithic assemblages in the historic period are rare, more descriptive detail and measurements are included below than would usually be demanded by such material.

Chipped Stone

Gunflints

A total of 47 flints for flintlock firearms was found at the site. All of these are made from the local brown and gray banded and mottled chert. Most of these gunflints (especially Types 1 and 2) were probably made by Apache flint knappers—Hamilton (1960: 73–77) cites several examples of Indians making gunflints long after contact with Europeans—but Spanish soldiers who had been on the frontier for a long time may have become adept at making their own flints out of local materials. Although European gunflints occasionally occur in Spanish colonial sites, none was found at Mission San Lorenzo.

As a group, these gunflints are rather large. Both faces of some specimens are completely covered with small thinning flake scars (especially Type 1), but most of the flints have large removal flake scars of the original flake showing on one or both faces. Only one flint (Type 6) retains the bulb of percussion of the original flake on one face. All of the specimens show signs of some use, usually on more than one edge, but none shows really heavy wear or battering. The leading edges (which struck the frizzen) are usually ragged rather than smooth and straight.

Type 1 (Figs. 62, G–I, & 63, A), 10 specimens.—Ranging in shape from almost square to rectangular, these flints are bifacially flaked on all four edges. They have distinct corners forming an angle of about 90° and straight or slightly convex edges. The edges are usually thin and sharp without beveling and most specimens are completely flaked on both faces—the workmanship resembles that found on carefully flaked projectile points.

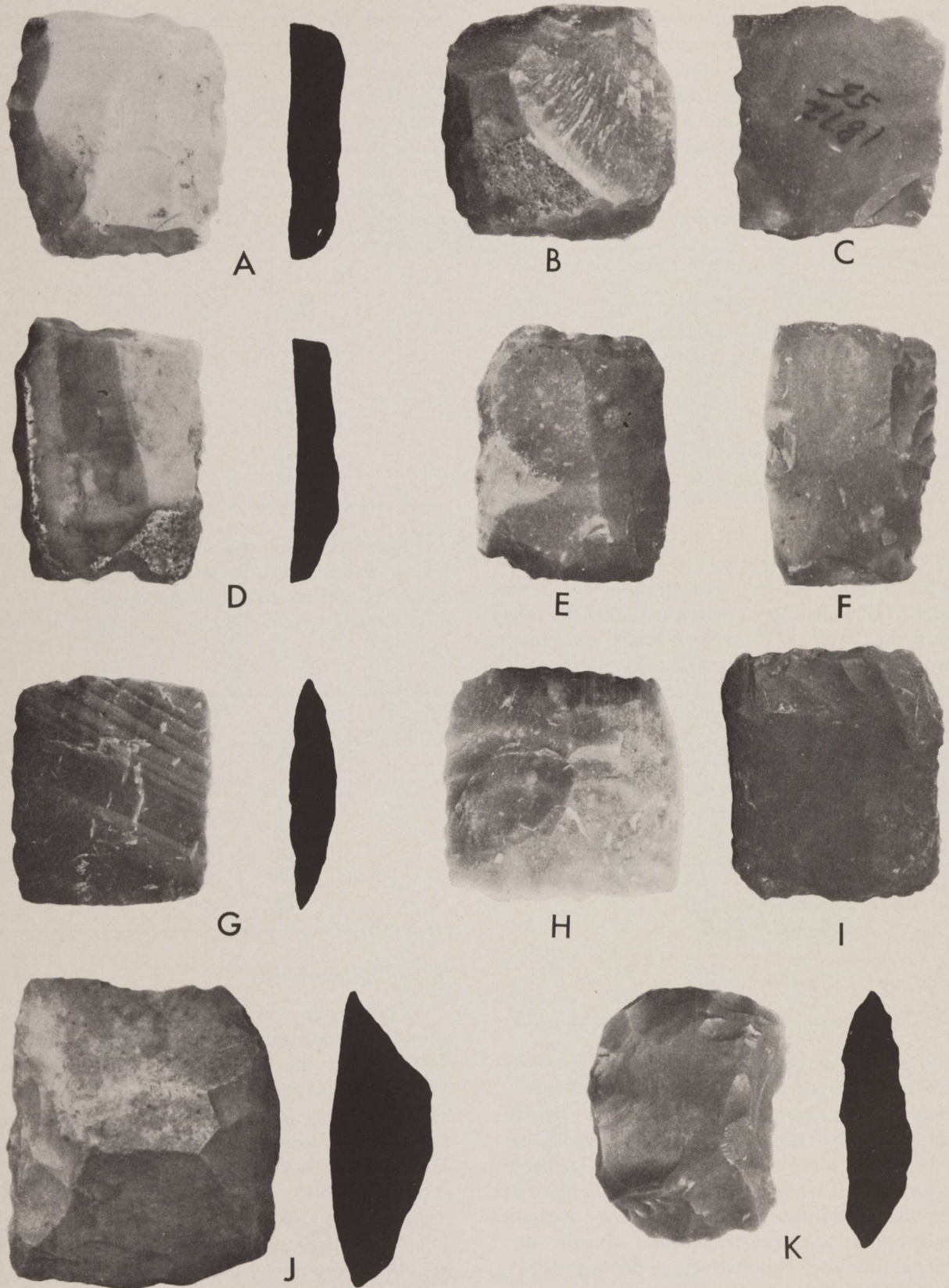
Dimensions (cm.):	Length	Width	Thickness	Weight in grams
	2.9	2.5	0.8	7.0
	2.7	2.4	0.8	5.8
	3.0	2.5	0.9	7.9
	2.7	2.4	0.7	6.0
	2.9	2.7	0.8	7.0
	3.5	3.1	0.7	7.1
	3.6	2.4	0.7	5.9
	3.1	2.7	0.7	6.9
	3.7	3.0	0.8	10.5

Type 2 (Figs. 62, D–F, and 63, B), 5 specimens.—These rectangular flints are unifacially flaked on all four edges. They have distinct angular corners and straight to slightly convex edges which are steeply beveled from one face. They were made from long, narrow, thin blades and have one smooth flake scar on the flat ventral face and two large parallel flake scars on the beveled dorsal face. It is probable these specimens were made from the midsections of long blades like those described below in the section on flakes (as were the Type 1 scrapers).

Dimensions (cm.):	Length	Width	Thickness	Weight in grams
	3.7	2.8	0.8	9.5
	3.4	2.7	0.9	11.7
	3.5	2.6	0.8	9.1
	3.4	2.2	1.1	8.2
	2.6	1.8	0.7	4.1

Type 3 (Figs. 62, A–C, & 63, C), 9 specimens.—Unifacially flaked on all four edges, the flints described here range from almost square to slightly rectangular in outline. The edges are

Fig. 62. Gunflints. A–C, Type 3; D–F, Type 2; G–I, Type 1; J, Type 5; K, Type 6; A–I, scale at left; J, K, scale at right.



0 4 cm. 0 4

straight to convex, all are steeply beveled from one face, and the corners are usually distinctly right angular. They are made from rather thick, broad flakes. The ventral face is a single flake scar with no trace of the removal bulb of percussion. The beveled dorsal face shows several irregular flake scars.

Dimensions (cm.):	Length	Width	Thickness	Weight in grams
	3.3	3.1	0.9	11.5
	3.2	3.0	0.7	11.0
	2.8	2.8	1.0	10.0
	3.1	2.8	1.0	11.7
	3.2	3.2	1.2	15.0
	2.3	2.3	0.6	3.2
	3.4	3.1	0.8	11.3
	3.6	3.2	1.5	17.5
	4.5	4.1	1.2	26.3

Type 4 (Fig. 63, D), 6 specimens.—These flints are roughly square to rectangular in shape with angular corners and straight to convex edges. All four edges are worked on each specimen, but some are steeply beveled and others are relatively thin. They are not regularly fashioned like the previously described types. Each specimen has one or more steeply beveled edges on each face and one or more thinly chipped edges on each face.

Dimensions (cm.):	Length	Width	Thickness	Weight in grams
	2.8	2.3	0.9	6.2
	2.6	2.5	0.6	-----
	3.2	3.0	0.7	6.9
	3.1	2.9	1.0	10.0
	3.5	2.9	1.0	11.4
	3.7	3.4	0.8	12.4

Type 5 (Fig. 62, J), 10 specimens.—The outline ranges from almost square to rectangular, with corners from sharply angular to slightly rounded; edges straight to convex. Each specimen is bifacially and/or unifacially flaked on three edges; fourth edge is left essentially unflaked. The unworked edge is characterized by a single smooth flake scar oriented parallel with the thin axis of the flint. This flat edge, which probably rested against the screw of the cock, is not the striking platform of the original flake in any example. Rather, evidence of some battering shows

on every specimen, indicating that this facet did not result simply from the flint having been snapped into two pieces. The unworked edge is parallel to the long axis of the flint on five specimens and parallel with the short axis of the flint on five specimens.

Dimensions (cm.):	Length	Width	Thickness	Weight in grams
	2.3	1.9	0.8	4.2
	2.9	2.2	0.9	6.7
	2.8	2.7	1.0	7.7
	2.5	2.5	1.0	7.1
	3.1	2.1	0.6	6.2
	3.4	2.3	1.0	9.8
	2.8	2.7	0.9	9.4
	3.6	2.3	0.6	5.8
	3.4	3.0	0.8	10.6
	4.0	3.0	0.8	11.0

Type 6 (Fig. 62, K), 7 specimens.—Roughly oval in outline with one straight edge; bifacially flaked around the entire perimeter except for the straight edge which is steeply beveled toward one face.

Dimensions (cm.):	Length	Width	Thickness	Weight in grams
	2.3	2.0	0.9	4.5
	3.0	2.2	0.6	4.5
	3.3	2.4	0.6	5.5
	3.2	2.6	0.9	8.5
	3.8	3.0	1.1	13.4
	4.4	3.0	1.4	18.4
	4.5	3.5	1.5	22.3

Bifacially flaked tools

Arrow points (Fig. 65, E-I).—Nine arrow points and fragments were found at the site. Two Scallorn and one Perdiz (Suhm, *et al.*, 1954: 504–506) were found on the surface and probably represent prehistoric occupations in the vicinity. Four triangular arrow points (Fig. 65, E through H) resemble the Fresno type (Suhm, *et al.*, 1954: 498). Three of these specimens have straight bases and the other has a concave base. The blade edges are straight. The basal widths in centimeters are: 1.2, 1.4, 1.6, and 1.7. The only complete specimen is 2.9 cm. long. The maximum thickness of the specimens varies from 3 to 5 mm. Two of these points were found

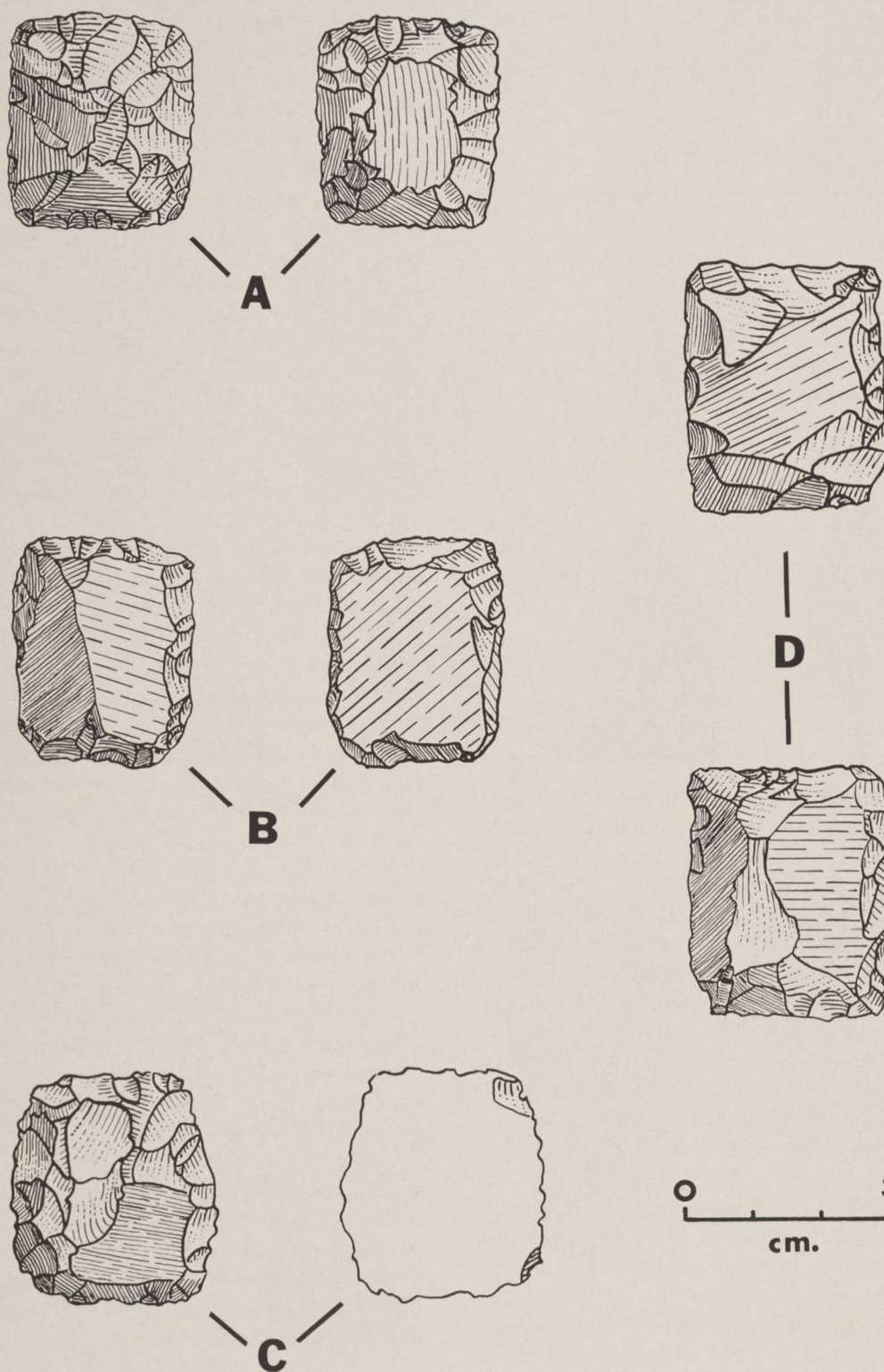


Fig. 63. Gunflints. A, Type 1; B, Type 2; C, Type 3; D, Type 4.

in the fill of Structure 7, one was recovered beneath the surface outside Structure 8, and one was on the surface. The other two arrow point specimens are distal tips only. One was found in the fill of Structure 7 and the other on the surface.

Fig. 64. Provenience of gunflints.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6
Structure 1						
floor	--	--	--	--	1	--
outside	--	--	--	--	1	--
Structure 7						
fill	--	--	--	1	--	--
floor	--	1	1	--	--	--
Structure 8						
floor	--	--	--	--	1	--
Structure 11						
fill	--	--	--	--	1	--
floor	--	--	--	--	1	--
Structure 13						
floor	--	--	--	--	1	--
Structure 14						
floor	1	--	1	--	--	--
Midden	5	1	4	--	1	2
Surface	4	3	3	5	3	5
Totals	10	5	9	6	10	7

Triangular arrow points similar to the four described above have been frequently found in historic Indian sites in association with European-made artifacts (Suhm, *et al.*, 1954: 498; Duffield and Jelks, 1961: 19, Harris, *et al.*, 1965: 292) and a good sample has recently been discovered from the Indian quarters in Mission San Juan Capistrano at San Antonio, Texas. It is quite probable that this was the style of arrow point being made and used by the Lipan Apaches during their initial contact with the Spaniards. Late Apache sites on the Southern Plains contain a preponderance of unnotched triangular arrow points (Wedel, 1959: 594).

Dart points, 13 specimens.—These artifacts represent several different types of projectile points which have been commonly found in prehistoric components dating to the Archaic stage. All of these specimens probably originated at nearby prehistoric burned-rock middens. Two of the dart points are expanding stem specimens (Frio type, Suhm, *et al.*, 1954: 428) with the distal tips missing. The fractured end of each specimen has been well battered. It is likely that

these points, one from the floor of Structure 7 and one from the surface, were collected from nearby prehistoric sites and used by the Spaniards as gunflints. Their present dimensions in centimeters are: length 4.0 and 3.2, maximum width 2.9 and 2.9, thickness 0.7 and 0.7. The other eleven dart points are unaltered and all were found on the surface.

Cutting tools, 40 specimens.—Ten of these implements are roughly circular, chipped around the entire perimeter, and show thinning flake scars on both faces. The edges are thin but jagged and irregular. Maximum diameters and thicknesses (in centimeters) are: 3.8 and 1.0, 5.6 and 1.4, 6.5 and 1.4, 7.2 and 1.7, 7.3 and 1.3, 8.0 and 1.4, 8.7 and 1.7, 9.1 and 1.7. Seven fragmentary specimens are ovoid in general outline with a crude point at one end. They are well thinned on both faces with sharp but irregular edges, and range from about 2.5 to 6.0 cm. wide, 3.5 to 8.0 cm. long, and 0.6 to 1.0 cm. thick. The remaining 23 bifacially flaked cutting implements are too fragmentary for meaningful description.

Blade knife, 1 specimen.—Found in the mission midden, this artifact is made from a long, narrow blade (much like those used for making blade scrapers) with a cortex-covered striking platform forming the base on one end and a positive bulb of percussion on one face. All edges of the flake have been carefully sharpened by bifacial flaking to form a triangular shaped knife.

Dimensions in centimeters: Maximum width at striking platform, 2.4, length 5.5, maximum thickness (at striking platform) 0.9.

Choppers, 7 specimens.—These large implements are irregular in shape and bifacially flaked to form a sharp and smooth cutting edge along one side. Six are made from chert river cobbles which have the original cortex intact except along the cutting edge (Fig. 67, B), the seventh is made from a large, multi-faceted core (Fig. 67, A). The cutting edges on all show signs of intensive use, and several show signs of battering on their unflaked edges where they apparently were used as hammerstones.

Discoidal, 1 specimen.—The function of this limestone spall is unknown. It has been bifacially flaked into a circular shape (Fig. 70, A) and

Fig. 65. Stone artifacts. A–D, long, narrow flakes, Type 1; E–H, small triangular arrow points; I, Perdiz arrow point; J–M, blade scrapers; E–I, upper scale; A–D and J–M, lower scale.



A



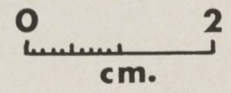
B



C



D



E



F



G



H



I



J



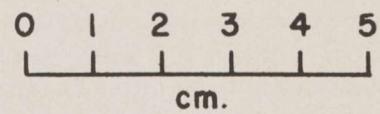
K



L



M



Dimensions (cm.):	Maximum Length	Thickness	Length of Cutting Edge
	8.2	3.7	7.0
	9.7	3.5	8.3
	8.7	5.2	7.8
	10.4	3.2	9.2
	10.0	6.7	8.5
	13.0	4.4	9.8
	13.6	6.4	13.1

then pecked and ground smooth on both faces. Found on the surface, its dimensions are: diameter 8 cm., thickness 1.4 cm.

Unifacially flaked tools

Blade scrapers, 22 specimens.—These scrapers (Fig. 65, J through M) are made from long, narrow chert blades which were removed in succession from a prepared core. Each implement has a smooth ventral surface composed of the removal flake scar. The dorsal surface of each scraper has two to four large flake scars which show where other blades were removed from the core previously (Fig. 66, A through D). Fifteen specimens are complete and have a portion of the original striking platform intact, with an adjacent positive bulb of percussion on the ventral surface. One specimen has a cortex-covered striking platform and the others all have freshly prepared striking platforms composed of a single facet. When the long axis of these scrapers is oriented vertically and they are viewed from one edge, the striking platform remnant is inclined from 12 to 18 degrees above horizontal with the upper edge toward the dorsal surface and the lower edge toward the bulb of percussion on the ventral surface. In other words, all the flakes were struck from the core at approximately the same angle—102 to 108 degrees below the plane of the striking platform. The entire perimeter of each blade (except for the striking platform at the base) is beveled on the dorsal face. On each specimen the steepest beveling and most intensive use occurs at the end of the blade opposite the striking platform and it is probable that resharpening along this end has reduced the length of most specimens. Many unused blades from which these scrapers were made were found and are described below. It is likely that types 2 and 3 gunflints were made from the midsections of the same type of chert blades.

Length	Dimensions (cm.)			Thickness at Beveled End	Length of Striking Platform	Width of Striking Platform
	Maximum Width	Maximum Thickness	Width of Beveled End			
4.4	2.8	1.0	2.4	0.5	1.1	0.5
5.5	3.2	0.9	2.7	0.9	1.2	0.6
5.1	3.9	0.9	3.1	1.1	1.2	0.7
6.3	4.4	1.6	4.1	1.6	2.2	0.8
5.0	3.3	1.3	2.4	1.8	2.8	1.2
5.7	4.4	1.2	4.0	1.0	1.9	0.7
6.4	4.9	1.6	4.3	1.2	2.8	1.4
7.6	4.6	1.6	3.7	1.3	2.6	1.2
7.8	4.4	1.3	3.6	1.0	2.4	1.2
9.9	4.5	1.7	4.0	0.8	1.8	1.3
4.3	3.4	1.3	3.2	1.2	...	...
4.7	3.7	1.3	3.6	0.6	1.6	1.0
5.0	3.6	1.3	...	0.9	1.0	0.7
5.0	4.0	1.2	2.9	1.1	1.5	0.7
3.9	3.0	1.2	...	...	...	...
...	...	...	...	0.9	1.1	0.6
3.2	2.4	0.8	2.2	0.4	1.0	0.5
...	4.6	0.9	4.2	0.8	...	...
...	3.9	1.1	3.5	0.7	...	...
...	...	0.9	...	0.8	...	...
...	3.4	1.1	3.1	0.9	...	...
...	3.3	0.6	3.1	0.5	...	...
...	3.9	1.2	...	...	...	...

Cortex scrapers, 5 specimens.—These implements are very similar to the blade scrapers except that they are made from an initial flake which is cortex-covered on the dorsal surface instead of having large flake scars from previously removed flakes. Each has a smooth ventral surface composed of the removal of flake scar, a

Length	Dimensions (cm.)			Thickness at Beveled End	Length of Striking Platform	Width of Striking Platform
	Maximum Width	Maximum Thickness	Width of Beveled End			
6.5	5.5	2.2	4.2	1.1	1.1	0.7
5.5	3.8	1.4	3.0	0.7	0.8	0.3
5.2	4.2	1.7	4.0	1.0	1.2	0.6
4.0	3.8	1.4	3.5	0.8	1.7	0.7
...	4.2	1.2	3.4	1.2	...	...

fragment of the original prepared striking platform, and a positive bulb of percussion on the

Fig. 66. Stone artifacts. A–D, blade scrapers.



A



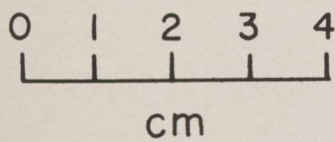
B



C



D



Length	Dimensions (cm.)		Length of Scraping Edge	Length of Striking Platform	Width of Striking Platform
	Width	Maximum Thickness			
12.1	7.8	3.3	80% of perimeter	2.8	1.9
5.9	4.4	1.9	80% of perimeter	1.5	0.6
5.7	3.8	1.0	80% of perimeter	1.0	0.6
5.4	3.8	1.6	3.0 & 2.3	2.8	0.9
4.0	3.7	0.8	2.4 & 1.0	1.9	0.8
5.8	3.1	1.0	2.7	4.0	1.0
4.8	3.4	1.5	2.2	1.6	0.7
4.6	3.3	1.0	1.8	1.9	0.5
5.0	2.7	0.8	4.2	1.9	0.7
3.9	3.4	0.7	80 % of perimeter	0.8	0.4
3.5	2.9	0.7	1.4	1.0	0.5
3.7	2.4	1.1	2.8	1.9	0.6
4.6	2.4	1.2	2.1	1.1	0.4
6.0	3.8	1.3	60 % of perimeter	----	----
4.8	3.8	1.3	1.6 & 3.0	----	----
4.9	3.0	1.5	2.4	----	----
3.3	2.6	0.8	2.4	----	----

ventral surface near the striking platform. The dorsal face of each specimen is covered with cortex of the original cobble-core except around the edges, which are beveled by secondary flaking. The steepest beveling occurs around the end of the flake opposite the striking platform.

Flake scrapers, 28 specimens.—These implements are made from irregularly shaped flakes of chert. Every specimen has a smooth ventral surface composed of the removal scar of the original flake. The dorsal surfaces show no regular flake pattern. Each scraper has a steeply beveled scraping edge along from about 10 to 80 per cent of the flake perimeter. Thirteen specimens have a remnant of the striking platform intact and an adjacent positive bulb of percussion on the ventral face. Three of the striking platforms have a cortex coating and the other ten are freshly prepared and show only a single facet. Measurements of more complete specimens are shown above.

Scraper fragments, 9 specimens.—The nine fragments of scraper edges found probably are from one of the scraper styles described above. Each has a smooth ventral surface and a steeply beveled edge on the dorsal face. Sizes range from 2 to 4 cm. in maximum length.

Gravers, 8 specimens.—All of these implements are formed on the edges of irregularly

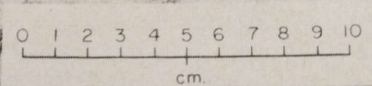
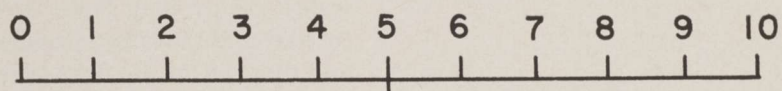
shaped flakes. In five of the flakes, the striking platform remnant and adjacent positive bulb of percussion are intact, two are cortex-coated, and three are freshly prepared, showing only one facet. One graver has three cutting beaks and all others have only one—all show some wear and several are heavily worn. The graver beaks are formed by two adjacent concavities chipped uniaxially into the edge of the flake leaving the sharp beak between the concavities.

Dimensions (cm.)						
Maximum Flake Diameter	Maximum Flake Thickness	Beak Length	Beak Width at Base	Beak Thickness	Striking Platform Length	Striking Platform Width
5.7	1.3	0.7	1.5	0.4	2.2	1.0
4.6	1.3	0.5	0.9	0.3	1.1	0.4
3.8	1.0	0.4	0.7	0.4	1.5	0.8
3.4	0.7	0.7	0.9	0.2	1.9	0.8
3.8	1.1	1.0	1.4	0.3	2.1	0.9
5.3	1.1	0.8	1.2	0.3	----	----
2.5	0.7	0.4	0.5	0.4	----	----
3.3	0.6	0.5,0.4, 0.4	0.6,0.6, 0.7	0.4,0.3,0.3	----	----

Fig 67. Stone artifacts. A, B, large choppers; C, limestone socket for door post.



cm.



Spokeshaves, 12 specimens.—Twelve irregularly shaped flakes with small concave scraping edges uniaxially chipped into an edge were found. Each has a smooth ventral surface composed of the original flake removal scar. The concave scraping edges, steeply beveled on the dorsal surface, show intensive use on all specimens. The concavities are all U-shaped in outline. One spokeshave, made on a blade scraper described previously, has three concave scraping edges, but all other specimens have only one concavity.

Maximum Flake Diameter	Maximum Flake Thickness	Dimensions (cm.)		Length of Striking Platform	Width of Striking Platform
		Depth of Concave Scraping Edge	Width of Concave Scraping Edge		
7.3	1.8	0.3	0.9	1.9	0.7
5.8	2.1	0.6	1.1	1.1	0.5
6.2	1.5	0.4	0.9	2.6	1.1
5.4	1.3	0.4	2.2	1.7	0.9
5.2	0.9	0.4	1.2	1.3	0.7
5.0	0.8	0.3	0.7	1.0	0.5
4.1	1.1	0.5	1.7	---	---
4.4	0.7	0.5	1.4	---	---
3.2	0.5	0.4	0.9	---	---
3.0	0.8	0.2	0.7	---	---
3.5	0.7	0.2	0.8	---	---
5.0	1.3	0.4, 0.5, 0.4	1.0, 0.7, 0.8	1.5	0.7

Cores

Six chert cores, from which numerous flakes had been removed, were found at the site (Fig. 69, A, D).

Number 1 is 9.3 cm. by 8.8 cm. by 6.3 cm. It retains cortex of the original stream-rolled cobble on about 40 per cent of the surface. Remainder of the surface is composed of two fairly flat, prepared, striking platforms adjacent to each other; several long, narrow flakes have been struck from each of them. This core is in the shape of a rough tetrahedron with two adjacent cortex-covered facets and two adjacent prepared striking platforms. It was found in the fill of Structure 11.

Number 2 is 9.0 cm. by 7.4 cm. by 7.4 cm. The original cortex is present on only one small corner. The surface of the core is composed of four roughly triangular, adjacent, prepared striking platforms (Fig. 68, C), which are

roughly flat and composed of several large flake scars which resulted from flake removal using one or more of the adjacent striking platforms. This core forms an excellent tetrahedron and probably, along with other similar cores, served as the source of the long, narrow blades which were made and used so commonly at this site. It was found in the fill of Structure 11.

Number 3 is 8.2 cm. by 8.1 cm. by 4.4 cm. About 50 per cent of the surface is covered by cortex of the stream-rolled cobble. A striking platform was prepared on one end of the cobble by three long, narrow, adjacent flake scars (Fig. 68, A). At least five long, narrow, adjacent flakes were removed from one face of the cobble using the prepared striking platform. Here is another obvious source of the long blades and blade tools used at this location.

Number 4 is 10.3 cm. by 8.8 cm. by 6.0 cm., and is a fine example of a conical shaped core (Fig. 68, B). The prepared striking platform is roughly oval in outline, roughly flat-surfaced, and formed by several large, adjacent flake scars (one is 9.6 cm. long and a maximum of 3.3 cm. wide). Many long flakes were struck from the core around the entire perimeter of this platform and the ends of the flake scars form the point of this conical core. Although different in shape from the cores described previously, this one would have served as an excellent source of the long, narrow blades which were found commonly at the site.

Number 5 is 9.2 cm. by 7.0 cm. by 4.6 cm. About 50 per cent covered by cortex, it was a river cobble which was broken in half by one fracture. Using the fracture plane as a striking platform, several flakes were removed along one edge.

Number 6 is 7.1 cm. by 5.6 cm. by 3.1 cm. This small core retains small patches of cortex in several places. It is irregularly shaped, but scars reveal that several long, narrow blades were removed from its surface in a variety of directions.

Flakes

Included in this category are all the unaltered fragments of chert which were found at the site. A large number of these fragments are complete flakes with the removal flake scar forming one face and a fragment of the original striking platform and adjacent positive bulb of percussion preserved intact.

Type 1 (19 specimens) are long, narrow blades with the removal flake scar forming the ventral face and from one to five long, parallel flake scars of previously removed blades forming the dorsal surface (Fig. 65, A–D, and Fig. 69, B, C, E). Only three were removed from a core with a cortex-covered striking platform—the remainder have remnants of freshly prepared striking platforms. Two broke away from the core with a hinge fracture on the end opposite the source of the removal blow, and the remainder broke straight out of the core and have a feathered end opposite the striking platform and bulb of percussion. In general outline the flakes are roughly rectangular with the striking platform forming one end. The maximum width of the flakes occurs at the striking platform end of three specimens, at the end opposite the striking platform of three specimens, and more toward the center of the remaining blades. Flakes of this type were used for fashioning the blade scrapers and blade knife described above and probably served as a source of Type 2 and 3 gunflints. Measurements of more complete specimens are shown below.

Length	Dimensions (cm.)			Number of	
	Maximum Width	Maximum Thickness	Length of Striking Platform	Width of Striking Platform	Long Flake Scars on Dorsal Face
9.4	5.3	1.4	3.1	1.1	3
7.1	4.0	2.5	2.9	1.7	2
8.6	5.0	2.0	3.7	2.0	3
8.8	3.9	1.7	2.3	1.0	3
8.0	3.4	1.1	1.6	0.9	3
6.7	2.9	0.9	1.1	0.5	2
8.7	4.5	2.0	----	----	3
6.8	3.4	1.2	1.8	1.0	1
7.7	4.3	1.5	3.5	1.3	3
7.5	3.5	2.0	1.9	1.0	1
5.4	2.9	0.8	1.4	0.7	2
----	3.2	0.8	1.5	0.8	3
----	5.3	1.6	2.9	1.4	3

Type 2 (39 specimens) are irregularly shaped flakes, showing much variation in size, but all have a single flake scar forming the ventral surface and an intact striking platform remnant and positive bulb of percussion. The one characteristic which all these specimens share is a cortex-covered striking platform remnant—showing that every one was removed from the

core using an unaltered cortex-covered face as the striking platform. Ten specimens have additional cortex-covered areas on the dorsal surface. Four flakes broke out of the core with a hinge fracture opposite the striking platform, and the other complete flakes all broke straight through and have feathered or faceted end. Measurements of a sample, including largest and smallest, are shown below.

Length	Dimensions (cm.)		Length of Striking Platform	Width of Striking Platform
	Width	Maximum Thickness		
8.0	6.5	2.3	7.5	2.3
6.4	4.7	1.0	4.2	1.2
6.9	3.0	1.6	1.4	0.8
5.0	3.2	1.1	3.7	1.1
4.8	3.0	1.0	2.3	1.0
4.3	3.4	0.9	3.1	0.8
4.1	2.5	0.9	1.8	0.7
3.9	2.7	0.8	2.4	0.6
3.2	2.9	0.7	2.5	0.7
3.0	2.4	0.5	1.2	0.4
2.7	2.0	0.7	1.1	0.4
2.8	1.8	0.6	1.2	0.6
2.5	1.9	0.7	1.0	0.3
1.7	1.3	0.4	0.8	0.4

Type 3 (95 specimens) flakes vary widely in size and shape, but every specimen was struck from a core using a freshly prepared striking platform. Each flake has a portion of the prepared striking platform preserved on one edge with an associated positive bulb of percussion on the ventral surface. These flakes show no signs of either alteration or use. Measurements of a sample, including the smallest and largest, are shown below.

Type 4 (54 specimens) flakes are irregularly shaped and tend to be small and thin compared to the previously described types. They apparently resulted from the thinning or resharpening of bifacially flaked cutting tools. A small part of the cutting edge of the tool is preserved as the striking platform on the flake and the striking platform is oriented less perpendicular to the long axis of the flake. The use polish on the edge of the original cutting tool can usually be seen along the distal edge of the striking platform of each flake. Measurements of a sample, including the largest and smallest, are shown below.

Length	Width	Dimensions (cm.)			Number of Large Facets on Striking Platform Remnant
		Maximum Thickness	Length of Striking Platform	Width of Striking Platform	
8.8	6.7	2.9	1.4	0.5	1
7.3	4.6	1.1	1.8	0.5	1
6.6	5.1	1.3	3.6	1.2	1
5.9	5.0	1.1	2.7	1.1	1
4.5	3.7	1.9	2.6	0.9	1
5.2	3.9	1.7	2.1	1.0	1
3.8	2.9	0.6	1.0	0.5	1
4.1	3.1	1.1	2.8	0.8	1
4.0	3.1	1.1	1.8	0.8	1
3.5	2.0	0.6	1.5	0.5	1
3.8	2.9	1.0	1.6	1.0	1
3.0	2.1	0.5	1.5	0.5	1
3.0	2.8	0.7	1.1	0.4	1
2.5	1.9	0.5	1.1	0.4	1
1.8	1.6	0.4	1.0	0.4	1
1.5	1.5	0.4	0.7	0.3	1
4.9	3.0	1.0	2.8	0.8	3
4.3	3.6	1.0	1.6	0.8	2
4.3	3.4	0.9	2.3	0.7	2
4.0	2.8	0.9	2.0	0.8	3
3.1	2.8	0.9	1.5	0.7	2
2.6	1.9	0.5	1.5	0.4	2
2.0	1.9	0.8	1.0	0.5	3

Length	Dimensions (cm.)			Length of Striking Platform	Width of Striking Platform
	Width	Maximum Thickness			
4.4	3.9	0.5		1.2	0.3
3.8	3.2	0.5		0.5	0.2
4.3	2.0	0.4		0.3	0.1
3.5	2.5	0.4		0.5	0.1
3.3	2.0	0.2		0.6	0.2
2.6	2.0	0.4		0.3	0.05
2.2	1.5	0.3		0.7	0.2
1.8	1.7	0.4		0.4	0.1
2.3	1.4	0.2		0.4	0.1
1.7	1.6	0.4		0.4	0.2
1.9	0.8	0.2		0.3	0.05
1.3	1.1	0.2		0.2	0.05
1.1	0.9	0.15		0.2	0.05

Miscellaneous flakes (255 specimens) include all of the remaining flakes from the site. Most are fragmentary and do not retain the striking platform and removal bulb of percussion. Many of them are probably the broken distal ends of previously described types of flakes. More than 50 per cent of these specimens show some evi-

dence of thermal fracturing and several dozen specimens have been intensively burned. There is a rather even size gradation from a maximum of 6.5 cm. by 5.3 cm. by 1.4 cm. to a minimum of 14 mm. by 8 mm. by 1.5 mm.

Ground Stone

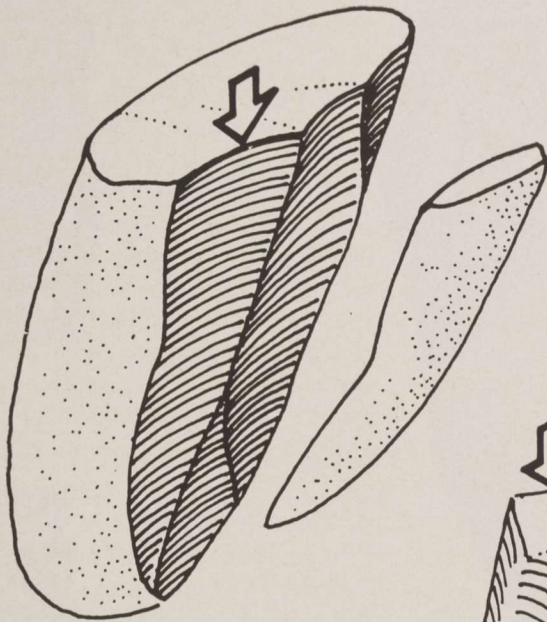
Pipe (Fig. 70, E).—This tubular stone pipe is made of an unidentified cryptocrystalline igneous rock which is dark gray in color. The smooth exterior surface was shaped by pecking and grinding. Large conical holes drilled in each end of the pipe meet to form an interior aperture about 2 mm. in diameter. The larger hole served as the bowl of the pipe and shows signs of burning; the smaller hole received the wood or reed pipe stem. The pipe's dimensions are: length, 4.5 cm.; diameter of stem end, 1.9 cm.; maximum hole diameter at stem end, 1 cm.; diameter of bowl end, 2.3 cm.; depth of bowl 2.5 cm.

The pipe, probably originating with the Lipan Apaches, was found in the mission midden. Tubular ceramic and stone pipes are a commonly occurring item in the late Apache sites on the Southern Plains (Wedel, 1959: 594).

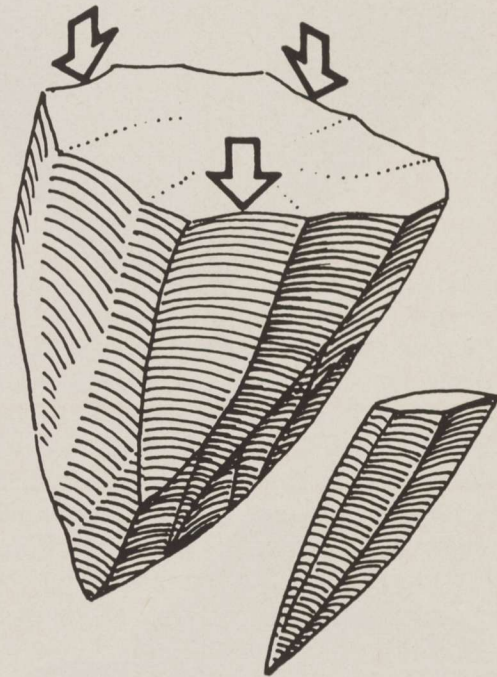
Grinding slabs, 8 specimens.—All of these artifacts are made from local limestone. The more complete ones are thin and oval to roughly rectangular in shape. One fragmentary specimen is ground on only one surface, but all others have been well smoothed on both surfaces and around the edges as well. On two slabs there are numerous fine, parallel striations in one face which look like they could have been made by cutting the surface with a sharp flint flake. These slabs do not have distinct or deeply concave grinding surfaces, but virtually the entire surface is well smoothed from use. Measurements of complete specimens are shown below.

Length	Dimensions (cm.)	
	Width	Thickness
20	16	4.8
19	14	4.4
20	14	4.2
16	12	3.0
16	12	3.8

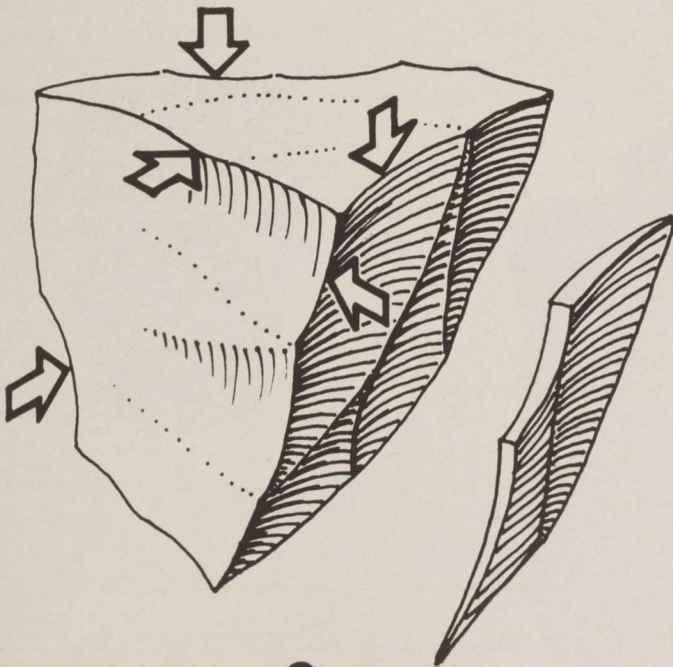
Fig. 68. Diagrammatic sketches of cores. A, No. 3; B, No. 4; C, No. 2.



A



B



C



A



B



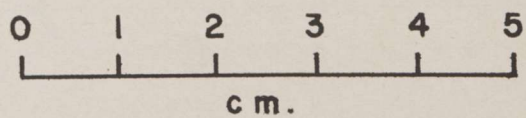
C



D



E



Metate (Fig. 70, D).—One small fragment of a metate made of vesicular basalt was found on the floor of Structure 11. It has a smoothly ground upper surface, a beveled edge and flat under-surface, all of which were shaped by pecking. This specimen, 3.8 cm. thick, is probably part of a carefully shaped metate which was made in Mexico and laboriously transported to the frontier. It probably was similar to modern basalt metates used in Mexico which are curved rectangular slabs with beveled edges and supported at an angle on three tapered legs.

Manos, 2 specimens.—Two fragments of manos made of vesicular basalt were found. Both are square in cross section with smoothly ground, convex faces and rounded edges. One is an end fragment and the other a median section (Fig. 70, B and C) of long, two-handed manos used with the style of metate described above. A complete mano of this style is a long bar (about 30 cm.) tapered slightly toward each end. These manos probably were brought to San Lorenzo from some manufacturing center in Mexico. The median fragment tapers from 5.1 cm. by 5.1 cm. at one end to 4.6 cm. by 4.6 cm. at the other and is about 9.5 cm. long. The end piece is 8.5 cm. long and tapers from 4.4 cm. by 4.4 cm. to 2.8 cm. by 2.8 cm. One specimen was found in the fill of Structure 14, and the other was on the disturbed surface of the site.

Pitted slab (Fig. 67, C).—This large slab of local limestone has been carefully shaped into a circular disc about 26 cm. in diameter and 12 cm. in thickness. Situated centrally in one face is a smooth circular pit 13 cm. in diameter and 5 cm. in maximum depth. It was found on the bulldozed surface of the site and may have served as a socket to support the base of a pivot post on a door or gate.

Hammerstones

Flint knappers probably used these well-worn implements from the mission midden. Both are made from small limestone cobbles.

Specimen 1 is oval and fairly thin. Both ends show signs of extensive battering. The faces and one long edge are highly polished from use; the other long edge has been extensively battered

and pitted. Extending back onto the central part of each face from the battered edge are hundreds of very fine striations. It is quite possible that the battered ends of this hammerstone resulted from the removal of blades and flakes from chert cores that the battered edge and adjacent scratched surfaces were produced through the percussion shaping of scraping and cutting tools. This tool is 10.5 cm. long, 6 cm. wide, and 3 cm. thick.

Specimen 2 is thick and pear-shaped. It shows an identical pattern of use as that described for Specimen 1, but it was not used as intensively or extensively. Both ends and one edge show slight battering. One face is smoothly polished and has many fine striations extending back from the central part of the battered edge. This hammerstone is 11 cm. long, 6.2 cm. wide at large end, 3.8 cm. at small end, and 4.5 cm. thick, maximum.

Worked Shell

Fresh water mussels probably were brought to the site from nearby pools in the Nueces River where these mollusks still can be found. In addition to serving as a food source, the shells were used as tools and ornaments. The mission midden contained numerous fragments of mussel shells, but only a sample of these were collected. The mussels apparently were collected regardless of size, and shells 3 to 5 cm. in length occur as commonly as do the larger ones 12 to 14 cm. in length. One perforated pearl (Fig. 60, I) from a mussel is described in the section on beads.

Shell scrapers

Nine of these 17 scrapers (only one a complete valve) consist of heavily worn ventral edges of large mussel shells (Fig. 37, A–C). The naturally sharp and convex ventral edge of a complete valve or large fragment apparently was utilized for scraping with the shell held approximately perpendicular to the surface being scraped. The scraping edges range from 2 to 8 cm. in length, but most appear to be fragmentary.

The other eight specimens are fragments of large mussel valves which have a heavily worn edge. On every specimen a thick, broken edge oriented approximately perpendicular to the ventral edge of the valve was used for scraping, with the shell fragment held at an angle of about

Fig. 69. Stone artifacts. A, D, large cores with prepared striking platforms; B, C, and E, flakes, Type 1.



A



B



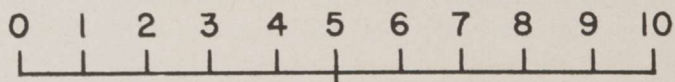
C



D



E



cm.

Fig. 71. Provenience of worked stone.*

	Cutting tools	Choppers	Scrapers				Frag- ments	Gravers	Spoke- shaves	Cores	Flakes					Grinding slabs
			Blade	Cortex	Flake						Type 1	Type 2	Type 3	Type 4	Misc.	
Structure 1																
floor	--	--	--	--	--	--	--	--	2	--	3	--	--	--	--	--
Structure 2																
outside	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
fill	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	--
floor	--	--	1	--	--	--	--	--	--	--	--	--	2	--	8	--
Structure 3																
floor	--	--	1	--	--	--	--	--	--	--	--	--	1	--	--	--
Structure 4																
floor	1	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--
Structure 6																
outside	--	--	--	--	--	--	--	--	--	--	--	1	--	--	4	--
Structure 7																
fill	4	--	--	--	--	--	--	--	--	1	--	2	7	4	16	--
floor	3	--	--	--	1	--	--	--	--	--	--	2	6	9	16	--
Structure 8																
fill	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	--
floor	--	3	--	--	--	--	--	--	1	--	1	1	3	2	9	--
Structure 10																
fill	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	--
Structure 11																
fill	--	--	--	--	--	--	--	--	--	2	--	--	1	1	1	--
floor	--	--	--	--	--	--	--	--	1	--	1	4	3	1	10	2
Structure 12																
fill	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--
floor	--	--	1	--	1	--	--	--	--	--	--	4	5	1	6	--
Structure 13																
fill	--	--	--	--	1	--	--	--	--	--	--	1	2	4	5	--
floor	--	--	1	--	--	--	--	--	--	--	--	--	2	--	2	--
Structure 14																
fill	1	--	--	--	1	--	--	--	1	--	--	3	5	4	13	3
floor	--	--	--	--	--	--	--	--	--	--	--	2	2	1	9	1
Midden	10	2	7	2	11	6	3	4	--	--	4	13	31	18	86	--
Gate Area	--	--	--	--	--	--	--	--	--	--	--	--	1	1	1	--
W.Wall Area	--	--	--	--	--	--	--	--	--	--	1	--	--	--	2	--
S.Wall Area	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Surface	20	2	11	3	13	3	5	4	3	3	11	6	19	8	57	2
Totals	40	7	22	5	28	9	8	12	6	19	39	95	54	255	8	

* Provenience of stone items not shown here appears in the text.

45 degrees to the surface being scraped and the concave surface of the shell forming the upper and advancing surface of the scraper. The scraping edges range from 1.5 to 3.5 cm. in length.

Fig. 70. Ground stone artifacts. A, round flat disc; B, end of circular cylindrical mano; C, end of rectangular mano; D, edge of flat metate; E, tubular stone pipe. Specimens B-E are made of igneous rock not found in the Nueces canyon.

Shell ornaments

Number 1 is a pendant made from the hinge of a very large mussel shell. The cusp portion of the hinge was cut out of the valve, carefully smoothed into a rough teardrop shape, and drilled through the small end for suspension. This attractive ornament was found in the mission midden, but it is perfectly preserved and has a bright, pearly lustre. The dimensions

(cm.) are: length 2.1, width at big end 1.2, width at small end 0.6. The suspension hole was drilled through the specimen from one side and its uniform diameter is 1 mm.

Number 2 is a small, flat slab of shell which has been carefully formed into an egg-shaped outline. Both faces and all edges have been ground very smooth. This object may have been shaped to be inlaid in a wood or metal surface. Its dimensions are: length 2.4 cm., width 1.6 cm., thickness 3 mm. This specimen was found on the disturbed surface of the site.

Number 3 is a complete valve of a small mussel whose interior and exterior surfaces have been ground smooth. The exfoliated outer surface has been entirely removed leaving only the smooth, white, nacreous inner layer which has a brilliant pearly lustre. Upon careful examination it can be seen that the surfaces of the shell are covered with fine random striations, which resulted from the grinding and polishing process. This artifact, its function unknown, was found in the mission midden and is 3.4 cm. long and 2.5 cm. wide.

Miscellaneous shell

A sample of 33 fresh-water mussel shells was collected from the site. Their provenience is shown in Figure 73.

Worked Bone

Bone pins

Number 1 is a heavily ground and polished second or fourth metapodial of a deer. The distal end has been ground to a long, sharp point and many grinding striations are visible under magnification. The curved shaft has been well polished. The proximal joint forms a flattened circular head for the pin. This joint also has been ground smooth on both sides and the notches between the joint and the shaft of the bone have been deepened. In its present shape this specimen would serve excellently as either a straight pin or a sewing needle (thread could be tied in the notches below the head). This pin is 4.2 cm. long, the central part of the shaft is 4 mm. by 2 mm., and the head is 6 mm. in diameter. Identical pins have been found recently with Coahuiltecan Indian burials and in the middens at Mission San Juan Capistrano in San Antonio, Texas.

Number 2 is a similar pin but this one is made

from the bone which forms the dorsal fin of a catfish. The distal end has been ground and polished to a sharp point and the curving shaft also shows grinding striations in the surface. The joint on the proximal end has been altered only slightly. This specimen, found in the fill of Structure 7, would serve well as either a straight pin or a needle. A similar catfish spine implement is reported from a prehistoric site in West Texas by Epstein (1963: 81). The dimensions: are 3.2 cm. long, 2 mm. wide at shaft and 5 mm. wide at proximal end.

Antler flaking tool

This tip from a deer antler shows evidence of intensive use on the distal end. A long beveled facet has been ground at the end to produce a working edge shaped like the end of a screwdriver. This working end has been well smoothed from use, and numerous scratches and grooves radiate back onto the shaft from the end. The proximal end of the implement has a fresh, irregular break. It was found on the bulldozed surface. This artifact may have been used in shaping stone tools by the pressure flaking technique. Its dimensions are: 6 cm. long, 1.3 cm. maximum diameter, 5 mm. long at working edge, and 2 mm. wide at working edge.

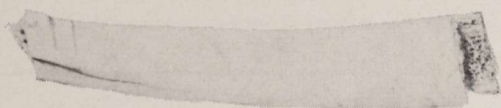
Deer ulna tools

Four deer ulnae show signs of use, probably as awls or pressure flaking tools. The distal tips of all four specimens have been broken (Fig. 72, K, L), but around the broken edge on each there are scratches and striations. The proximal ends are unaltered. Because of their convenient size and shape, deer ulnae have been commonly utilized by Indians and are frequently reported at prehistoric sites in Central and West Texas. One specimen was found on the floor of Structure 8, one on the floor of Structure 14, one in the mission midden, and the other on the disturbed surface of the site.

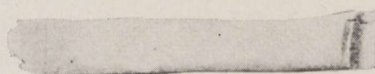
Cut bones

Many of the food bones which were found at the site show butchering marks (Fig. 72), mostly

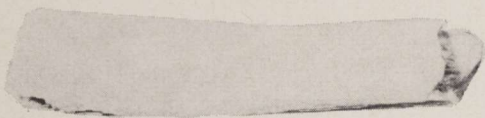
Fig. 72. Bone artifacts. A-H, deer and bison ribs cut into lengths; I, J, midsections of long bones showing cuts on both ends; K, L, worked deer ulnae; M-O, bones showing cut marks; P, bone pin, full size.



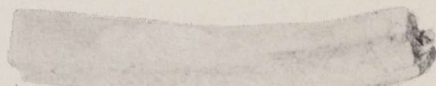
A



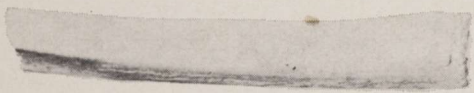
B



C



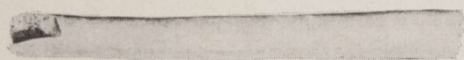
D



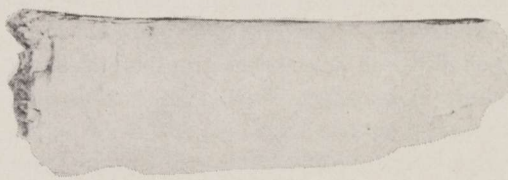
E



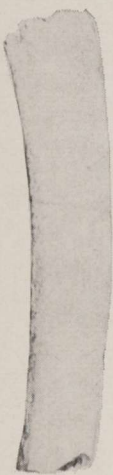
F



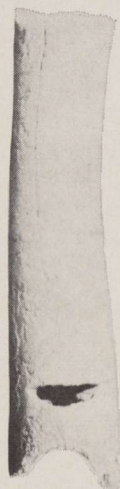
G



H



I



J



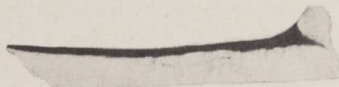
K



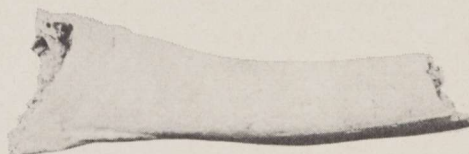
L



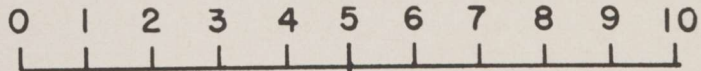
M



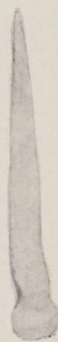
N



O



cm.



P

clean, deep, straight cuts which probably were made with iron axes and knives. Long bones commonly have one or more cut marks near the joint ends. The cut marks run perpendicular to the long axis of the bones and probably resulted from cutting into joints to divide the carcass into sections.

The most obvious and consistent butchering evidence is furnished by the rib bones of the food animals. After the two "sides" of ribs were separated from the vertebral column, they were cut into long strips across or perpendicular to the long axes of the bones—in other words, they prepared the equivalent of our modern "short ribs" or "spare ribs." Thirty-nine short rib sections have been grooved and broken at each end. On all except one specimen the cutting grooves are on the interior or concave face of the ribs. Five specimens probably are cow or bison, eighteen deer, and sixteen sheep or goat. The length of these cut rib sections ranges from 3.5 cm. to 9.0 cm. with the average being about 6.5 cm. in length. The provenience of the cut rib bones is shown in Figure 73.

Fig. 73. Provenience of worked bone and shell.

	Shell			Bone			
	Scrapers	Orna- ments	Misc.	Pins	Antler tool	Ulna tools	Cut ribs
Structure 7							
fill	--	--	3	1	--	--	4
floor	--	--	2	--	--	--	--
Structure 8							
floor	3	--	3	--	--	1	--
Structure 12							
floor	3	--	2	--	--	--	--
Structure 13							
fill	--	--	--	--	--	--	1
floor	--	--	1	--	--	--	6
Structure 14							
fill	--	--	2	--	--	--	--
floor	--	--	1	--	--	1	1
Midden	5	2	14	1	--	1	21
W.Wall Area 2	--	--	1	--	--	--	--
Surface	4	1	4	--	1	1	6
Totals	17	3	33	2	1	4	39

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PART II

THE ETHNOHISTORICAL INVESTIGATION

W. W. NEWCOMB, JR.

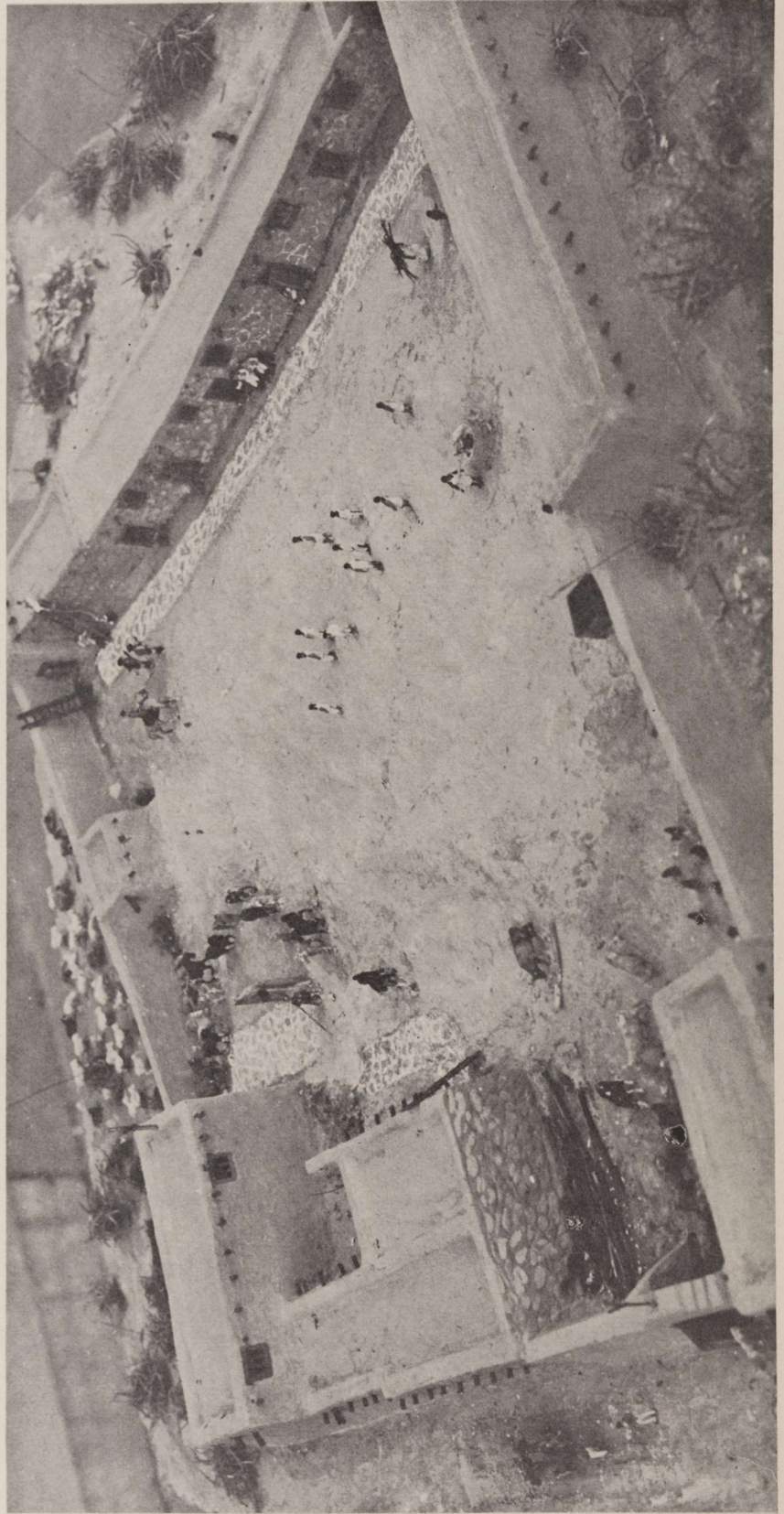
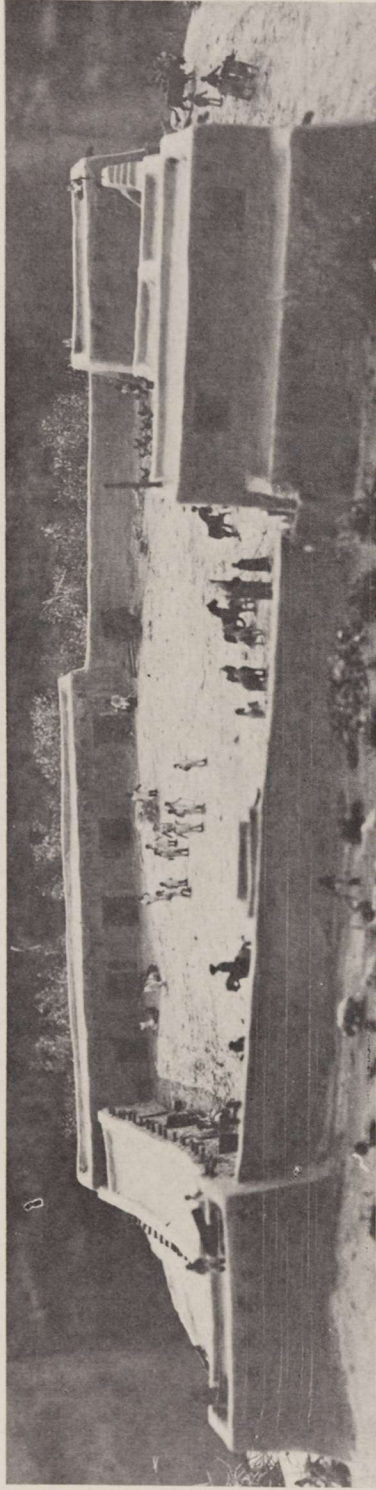


Fig. 74.—Scale model of Mission San Lorenzo, Texas Memorial Museum. Top, view of model looking north. Bottom, view of model looking down and toward the southwest.

The Historic Setting

Established in the wilderness of the upper Nueces River Valley, lacking official sanction, short on funds, poorly defended, and beset by innumerable other problems, the Franciscan Mission of San Lorenzo de la Santa Cruz was ill-starred from its founding in 1762. Even during its brief existence the mission played a minor role in the efforts of New Spain to maintain her northern borderlands, and her missionaries failed in their attempt to convert the Lipan Apaches to Christianity. No wonder the mission is poorly remembered and few have reason to note its story. Yet the tale of obscure, unsuccessful, short-lived San Lorenzo is one well worth telling, for it encompasses a critical and portentous period in Spanish-American history and it reveals much about the Lipan Apaches and other native peoples, as well as the Spaniards of eighteenth century Texas.

During the sixteenth and seventeenth centuries the Spanish had advanced relentlessly northward up the Mexican Plateau as mines were opened and as ranches and farms were established. This was a bloody, ruthless conquest; if the native peoples could not be enslaved, they were exterminated. But the farther the Spaniards advanced, the more difficult progress became. By the beginning of the seventeenth century the Spaniards realized that it was going to be extremely difficult, perhaps impossible to control and settle the northern regions of their colonial empire by military might alone. As a result, a system of conquest grew up which was an amalgam of bribery, the threat of force as exercised by strategically located presidios, and the establishment of missions in which to settle the natives. Bribery took the form of supplying food and goods and offering protection against enemies, if the Indians would agree to settle in "reductions." Such bribes were effective so long as the local Indians were impoverished and weak, but ineffective when the natives were well fed and military strong. Military force had been the stock-in-trade of the Spaniards, and in the

north the threat of force was made permanent by the construction of presidios. From such strong points garrisons could supposedly protect nearby missions and conduct campaigns. During the sixteenth century, chaplains had accompanied many expeditions, but they ordinarily served the Spaniards, making no serious attempts to convert Indians (Forbes, 1960: 39-40). But early in the following century the Franciscans began to build missions and in 1683 the Franciscan order established the Colegio de la Santa Cruz de Querétaro to train missionaries. Two other mission colleges, Nuestra Señora de Guadalupe de Zacatecas and San Fernando de Mexico, subsequently were opened. Priests from all three served in Texas missions, but only those from Querétaro served at San Lorenzo on the Nueces (Castañeda, 1938: 18-21).

The purpose of the missions was much broader than that of merely converting the Indians to Catholicism (Bolton, 1915: 10-13; 1918). It was, in fact, a broad-gauged attempt to destroy almost every facet of native culture and replace it with the "civilization" of the Spaniards. The Indians first were to be gathered together in a mission or village where they would live permanently. Once settled, the natives were to be taught the agricultural arts and many skills, such as house-building. They were to learn Spanish and abandon their native tongue, adopt European dress, and finally, become Catholics. Thus, the missions were extremely ambitious institutions, aiming for almost complete assimilation of the Indians. As Forbes (1960: 39) expressed it, "after a period of such 'brain washing,' they were expected to emerge as useful subjects of the King of Spain, although, of course, still Indians, and still inferior to Spaniards." This system of bribery, presidios, and missions was used until the end of Spanish colonial days and was very much a part of the Spanish attempt to pacify and settle the Apaches of Central Texas during the second half of the eighteenth century.

Most of the northern Mexican Indians and

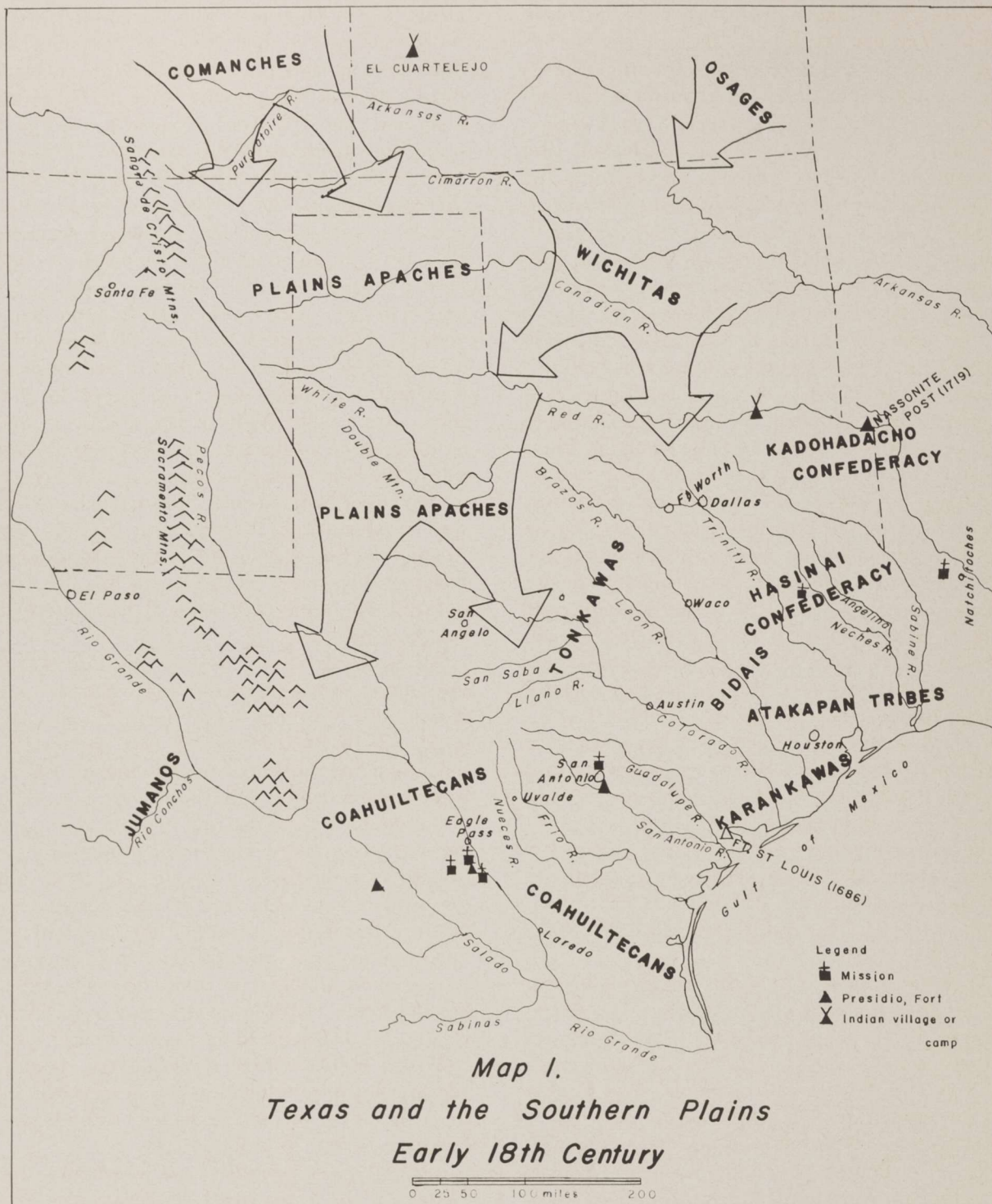


Fig. 75.—Texas and the Southern Plains, early 18th century.

particularly those in northeastern Mexico, were nomadic or semi-nomadic, following a hunting and gathering existence in a harsh and rather desolate land. These Coahuiltecan peoples could hardly have been numerous to begin with, and

though militant and recalcitrant when first encountered, by the eighteenth century most had been decimated and they posed no serious threat to the conquerors (Newcomb, 1961: Chapter 2; Weddle, 1968: 3-28). The frontier could move

beyond them, and in the last years of the seventeenth century Spain began to push the borders of her colonial empire northward into what is now Texas. Spaniards and Spanish expeditions had, of course, crossed parts of Texas before, from De Vaca and Coronado to De Soto and Oñate. In the early years of the century the Spaniards also had made permanent settlements in New Mexico, but they had not become familiar with the forbidding plains to their east. Vast reaches of Texas were unexplored and most of its native populace was all but unknown.

The immediate reason for renewed Spanish interest in Texas was the unexpected establishment of a French fort by La Salle on the Texas coast in 1686. Although the expedition of Alonso de León in 1689 found La Salle's Fort St. Louis a ruin, and the Frenchmen dead or captured by Indians, the import of their attempt was clear. The viceroy ordered the occupation of East Texas, and missions were established on the Neches River. The first, San Francisco de los Tejas, was founded in the spring of 1690 near the present town of Weches, and the second, Santísimo Nombre de María, was established nearby soon afterward. But the initially friendly Tejas Indians, who were village-dwelling Caddos of the Hasinai Confederacy, were not as docile or as amenable to Catholicism as had been supposed, the French threat was not as great or at least not as imminent as the Spanish supposed, the nearest Spanish settlement was about 400 miles away, and Spain needed to husband her hard-pressed resources. The missions were abandoned in 1693 (Newcomb, 1961: 286-289; Weddle, 1968: 14 ff.).

But the French were establishing colonies in Louisiana, exploring the lower Mississippi River, and soon were acquainted with the Wichitas and other distant tribes far up the Red and other rivers. The Pawnees, for example, were known to the French by 1678, and traders were among the Osage and Missouri tribes by 1694 (Thomas, 1935: 13). Before the century was over Apaches had brought word to the Spaniards in New Mexico of strange white men. In 1706 Juan de Ulibarri found incontrovertible evidence while at El Cuartelejo in western Kansas that the French were assisting and apparently arming the Wichita tribes in their struggles with the Plains Apaches (Thomas, 1935: 67-68; Gunnerson, 1968: 168). In 1714 Louis Juchereau de Saint

Denis, a French trader who had established a settlement on the Red River at Natchitoches, Louisiana, appeared at San Juan Bautista on the Rio Grande at the present Villa de Guerrero, Coahuila (Fig. 76). He had come to arrange a trade agreement with the Spaniards (Phares, 1952: 49-64; Weddle, 1968: 99-106). The viceroy was horrified by the man and his proposal, and as a consequence the Spanish reoccupied East Texas in an effort to erect a barrier to halt French penetration. Mission San Francisco de los Neches was built several miles from the abandoned San Francisco de los Tejas. Missions Nuestra Señora de los Dolores, Nuestra Señora de la Purísima Concepcion, and San José de los Nazonis were established near San Augustine, and San Miguel de los Linares was placed on the east side of the Sabine, eight leagues from the French settlement of Natchitoches. Presidio de los Adaes was constructed in 1721-22 near Mission San Miguel de Linares in the vicinity of present Robeline, Louisiana, serving as the Spanish capitol of Texas until 1772 when it was moved to San Antonio.

Although vigorously pushed, the East Texas missions were not successful and by 1731 three of them had been removed to the infant San Antonio, where the presidio of San Antonio de Béjar and the Mission San Antonio de Valero had been founded in 1718. In the west, Spain had also redoubled her efforts to secure and expand her northern borders. The Pueblo peoples of New Mexico had successfully revolted in 1680 and for twelve years were free of their foreign oppressors. But by the opening of the new century Spain was again in control of the Pueblo country. As a portent of things to come, however, when Colonel Pedro de Villasur was sent from Santa Fe into the plains in the summer of 1720 with forty-two soldiers, three settlers, sixty Indians, and a priest to investigate reports of French activity, his force was all but wiped out by hostile Pawnees. (Thomas, 1935: 36-39).

In 1719, after establishing a post among the Caddo Indians in northeastern Texas (Fig. 75), the French Bénard de la Harpe explored to the northwest well into what is now Oklahoma, reaching a thriving village complex of Wichita Indians (Margry, 1888: 241-306; also see Lewis, 1924; Smith, 1958-59; Newcomb and Field, 1967: 246 ff.). La Harpe, who had been instructed to explore the Red River and to establish

commerce with the Spaniards in Texas and New Mexico, dispatched M. Du Rivage to accomplish this mission. Du Rivage did not meet Spaniards and ascended the Red River only a little over a hundred miles (apparently to Lamar County, Texas; see Harris, *et al.*, 1965), but he carried much merchandise for the Indians and made friendly contact with a number of tribes. He heard, incidentally, that Canecys (the Caddoan term for Plains Apaches) lived upstream in the vicinity of what later became Spanish Fort. Also in 1719 Claude Du Tisé, coming from the Illinois country, visited two Wichita villages, and by 1723 Étienne Veniard de Bourgmond, former commandant at Detroit and an experienced trader, had built a post to protect French fur traders on the Missouri River well above the mouth of the Kansas. In the fall of 1724 in central Kansas he arranged a brief truce between the Kansa Indians and a band of Comanches (Wedel, 1959: 28-34).

From these beginnings, the way to the Spanish settlements in New Mexico through Comanche territory was opened up by Pierre Mallet in 1739. Mallet (or Pedro Malec as the Spanish had it), a 35 year-old trader and native of Montreal, traveled with a party of eight men including his brother, from a point on the Platte River near the mouth of the Loup, on a southwesterly course across Nebraska and Kansas, to Santa Fe (Margry, 1888: 455-462). The Mallet party was well treated in the Spanish settlements and remained eight or nine months. From Pecos Pueblo on his return journey, Mallet headed east, struck what was probably the Canadian, and followed its course until his horses were worn out. Part of his company turned northeast for the Illinois country but Mallet and three companions constructed canoes and floated down the river to the Arkansas, then to the Mississippi, and continued on to New Orleans. The news of Mallet's exploits encouraged the French in Louisiana to pursue the possibility of opening up trade with the Spanish in New Mexico. André Fabry de la Bruyère was soon sent by the governor of Louisiana to follow up the explorations of the Mallet brothers, but the expedition was abandoned because of dissension among its members and other difficulties (Margry, 1888: 472-492).

It was not until after 1747, following the conclusion of an alliance between the Wichitas and Comanches, that Frenchmen again found their

way across the plains to Santa Fe. Those men who made the journey—Luis Febre, Pedro Sartren, and Joseph Miguel in 1749; Felipe de Sandoval, a Spaniard, in 1749-1750; and Juan Chapis and Luis Foissy in 1752 (Hackett, 1941: 298-324; Thomas, 1940: 82-89), and perhaps others, did so on their own initiative and in their own interest. The Spanish, frightened at the French activity, confiscated the traders' goods and did not allow these men to return to French territory. It long has been held that some unknown Frenchman persuaded the Wichitas and Comanches to make peace, thus breaching the Comanche barrier to Santa Fe. But this view is almost certainly in error (Newcomb, n.d., and Newcomb and Field, 1967: 256-257).

The nature of the French advance into the plains from the east and northeast was, then, quite different from that of the Spanish. The French came primarily as traders, as employees of commercial enterprises or as private entrepreneurs. Their motives were personal gain, not necessarily the advancement of country or conversion of the Indian. Instead of subjugation of native peoples, they were interested in lucrative trading relationships; instead of establishing farms, ranches, or missions, at most they built trading posts. The French trader supplied what the Indian wanted—guns and ammunition particularly—not what the government dictated—and in return he obtained hides, tallow, skins, and slaves. The French trader worked within the framework of existing intertribal relationships, manipulating them to his own advantage when he could; the Spaniard imposed his own system, and when this was impossible he almost invariably acquired a new set of enemies. The French strengthened native peoples militarily by supplying them with firearms, and commercially when, as with the Wichitas, they happened to become middlemen in trade with more remote tribes. The French did not need to maintain large armies to protect themselves, though they were not immune to attack from those with whom they had not established friendly relations. The French trader was apt to acquire an Indian wife and settle in an Indian village; the Spanish soldier, in contrast, brought along his wife and children to live with him in a presidio. The Indian might reside with priest or other Spaniard, but only as neophyte, servant, or slave, not as an intimate member of the family.

In the vast buffer zone between the Spaniards on the south and west and the French on the north and east were hundreds of tribes and bands of Indians (Fig. 75). Some were known, many unknown, some hostile, and a few friendly to the European powers. Plains Apaches were adjacent to much of the Spanish frontier in the eighteenth century, extending eastward from the Pueblos of Spanish-held New Mexico through the Llano Estacado, south into the Trans-Pecos region, and southeastward through the Edwards Plateau and beyond. Apaches are speakers of Athapaskan (or Athapascan), a far-flung language family of western North America. Geographically, there were three discontinuous Athapaskan groups, a northern one distributed throughout much of Canada west of Hudson Bay from the southern provinces into Alaska, a Pacific coastal group scattered from northern California into British Columbia, and the Southern Athapaskans, referred to here as Apaches. The modern Apaches are split into a western and an eastern division on the basis of dialectic distinctions (Hoijer, 1938). The western tribes are the Navaho, San Carlos, Chiricahua, and Mescalero, the eastern the Kiowa Apache, Lipan, and Jicarilla. In the sixteenth and seventeenth centuries, ancestors of the modern eastern tribes, plus the Mescaleros, constituted a geographical and broadly similar cultural entity and they will be referred to here as Plains Apaches.

The Spaniards were the first Europeans to encounter and describe Apaches, Coronado's expedition meeting bison-hunting Querechos and Teyas in 1541. Subsequent Spanish expeditions met or learned of Apaches whenever they entered the American Southwest or ventured onto the southern plains. But the Apaches were scattered over a tremendous extent of territory, much of which Spaniards never visited, and were so little organized in a tribal or political sense that the Spaniards were unable to obtain an accurate idea of their divisions, numbers, or diverse cultural characteristics until the eighteenth century. Various explorers gave different designations to the same or similar peoples, and by the eighteenth century many Apaches were being forced out of their original homelands, some joining other Apache groups, so that all in all, it is difficult (and perhaps foolhardy) to attempt to trace the ancestry of modern Apache tribes.

After cowing and looting the Pueblos, Coro-

nado turned his army eastward in search of the riches of Quivira. For more than two months the expedition wandered over the plains, from eastern New Mexico, the Texas Panhandle, and Oklahoma, to Kansas, the exact route being a matter of conjecture. About two weeks after leaving Pecos Pueblo (the time depending on which source is used), on the Llano Estacado of eastern New Mexico or the Texas Panhandle, the expedition encountered bison-hunting Indians. Coronado said of them (Winship, 1896: 580-581):

... I came to a settlement of Indians who are called Querechos, who travel around with these cows, who do not plant, and who eat the raw flesh and drink the blood of the cows they kill, and they tan the skins of the cows, with which all the people of the country dress themselves here. They have little field tents made of the hides of the cows, tanned and greased, very well made, in which they live while they travel around near the cows, moving with these. They have dogs which they load, which carry their tents and poles and belongings. These people have the best figures of any that I have seen in the Indies.

Thus the Spaniards and Apaches met, the Spaniards intrigued by their first glimpse of life as it was lived on the plains, the Indians impressed perhaps by the horses, equipment, and size of the Spanish army. So also begins the multiplicity of names for Apaches. In this case, the name is derived from one of the Pueblo languages, for Jaramillo states (Winship, 1896: 588): "We found Indians among these first cows, who were, on this account, called Querechos by those in the flat-roof houses [i.e., Pueblos]." Hodge (1910: 339) has also pointed out that Querecho is "the Pecos generic *Tagukerésh* for the Apache or the specific *Keretsâ* for the Navaho tribe."

After leaving the Querechos the army traveled on for several days, Jaramillo alone saying that he believed it to be "twenty days or more" (Winship, 1896: 588), then encountered other Indians hunting bison. These people were called Teyas by the Spaniards, and though culturally very similar to the Querechos, they were their enemies (Winship, 1896: 578, 581). Castañeda said that: (Winship, 1896: 507)

The country was well inhabited, and they had plenty of kidney beans and prunes like those of Castile, and tall vineyards. These village settlements extended for three days. This was called

Cona. Some Teyas, as these people are called, went with the army from here and traveled as far as the end of the other settlements with their packs of dogs and women and children . . . A Teya was seen to shoot a bull [bison] right through both shoulders with an arrow, which would be a good shot for a musket. These people are very intelligent; the women are well made and modest. They cover their whole body. They wear shoes and buskins [probably high moccasins] made of tanned skin. The women wear cloaks over their small under petticoats, with sleeves gathered up to the shoulders, all of skin, and some wore something like little *sambenitos* [tunics] with a fringe, which reached half-way down the thigh over the petticoat.

Coronado (Winship, 1896: 581) added that the Teyas:

. . . have their bodies and faces all painted, are a large people like the others [Querechos], of a very good build; they eat the raw flesh just like the Querechos, and live and travel round with the cows in the same way as these.

Harrington (1940: 512) has discovered that the word Teya still exists in the Pecos-Jemez dialect and means eastern Apache. The probability would seem to favor the Teyas being eastern Apaches, but some authorities demur from this viewpoint (Schroeder, 1959a: 34–36).

Although several Spanish expeditions skirted or crossed Plains Apache lands in the years following the Coronado expedition, it was not until 1598 that these plains people again came into relatively intimate contact with the Spaniards. In the fall of that year, Vicente de Zaldívar was sent by Juan de Oñate, then in the process of colonizing New Mexico, to explore the plains east of Pecos Pueblo. Near modern Las Vegas, New Mexico, Zaldívar encountered Indians he termed *Vaqueros*, and crossing over to the Canadian River he continued to find *Vaqueros* (Bolton, 1916: 224–230). Before Oñate personally had been among these plains people, but after he had received the report of Zaldívar's expedition, he equated the *Vaqueros* with the *Querechos* (Hammond and Rey, 1953, I: 484). Oñate apparently had knowledge of what these Apaches were called by the members of Coronado's expedition, but preferred the Spanish designation for them to the older Pueblo term. Zaldívar and Oñate, though apparently knowing the Plains Apaches better than had the members of the Coronado expedition, failed to differentiate between subdivisions,

so that the generic "*Vaquero*" probably includes both the *Querechos* and Teyas (Gunnerson, 1956: 353–354). In June, 1601, Oñate himself set out to explore the plains and visit Quivira. Near the Canadian River, some eight days after crossing the Pecos ". . . some Indians of the nation called *Apachi* came out with signs of peace," made by extending the palm of the right hand toward the sun (Bolton, 1916: 252). This seems to have been the first recorded instance of the usage of Apache. The word is apparently derived from a *Zuñi* word, "*Apachu*," meaning "enemies" (Hodge, 1907: 63; Hodge, Hammond and Rey, 1945: 302; but also see Schroeder, 1959a: i).

There were few other direct contacts between the Spaniards and Plains Apaches in the early decades of the seventeenth century. Apaches continued to come to the Pueblos in winter to trade, and in this indirect way improved their knowledge of the European strangers. Soon, too, Pueblo refugees were seeking safety among Apaches, bearing witness to Spanish oppression. Of great ultimate importance, apostate Pueblo Indians brought with them a knowledge of horses and undoubtedly often escaped with these wonderful animals, so that the Apaches became familiar with them and probably began to acquire some. The internecine Spanish conflict between the Franciscans and the military, basically over which force was to benefit from the exploitation of the Pueblo Indians, dissipated Spanish strength, and at the same time the Pueblos, with a growing knowledge of Spanish motives and capabilities, were slowly mustering the strength and determination necessary to oust their conquerors. During these early years of the century the Plains Apaches were, for the most part, at peace with the Spaniards. It was not until friendly *Vaquero* Apaches were attacked and the survivors carried away as slaves in 1627 or 1628 that the usual pattern of later Spanish-Apache relations was established, but not until after another slave raid in 1638 did many of the Plains Apaches become chronically hostile to Spaniards.

The increasing difficulties the Spaniards were experiencing in New Mexico, the growing belligerency of the Plains Apaches, and the dearth of expeditions into the plains meant that Spanish knowledge of the Apaches on the southern plains was hardly increased during the middle decades of the seventeenth century. In 1675 an expedi-

tion led by Fernando del Bosque and Fray Juan Larios penetrated what later became the heart of Lipan Apache country. Crossing the Rio Grande in the vicinity of modern Eagle Pass, this expedition rode northward to the neighborhood of modern Edwards County, not many miles west of where the Mission of San Lorenzo de la Santa Cruz was to be established. Many different groups of Indians were encountered, but they were of Coahuiltecan, Tonkawan, or other affinity. None was Apache (Bolton, 1916: 288 ff.).

The Pueblo Revolt in 1680 had repercussions among nearby Indian peoples, one being the hastened spread of horses to them. It can hardly be coincidental that Plains Apaches appeared south and east of their usual range soon after 1680, raiding Spanish settlements and terrorizing already weakened native tribes. In 1684, Captain Juan Dominguez de Mendoza was sent from El Paso eastward into Texas in response to pleas from Jumanos and other tribes requesting aid against marauding Apaches. The reality of the Apache menace was brought home to the expedition by Apache attacks on it. Near modern San Angelo, Mendoza reported that Apaches "from the north" had up to that time "attacked us three times by night and by day, and the last night they wounded a soldier, inflicting upon him three arrow wounds, besides other injuries which the Apaches have caused" (Bolton, 1916: 337-338). Mendoza's report makes clear that the Apaches possessed horses; they even succeeded in stealing horses from the expedition.

In 1705, a year after he became governor of the province of Coahuila, Martín de Alarcón visited the missions of the Rio Grande and made a report on their condition to the viceroy. Among other things, he mentioned populous Indian nations living on the Frio River and suggested that Mission San Bernardo be moved there from the Rio Grande. These Indians were Coahuiltecan, indicating that Apaches had not yet displaced the indigenous people of south-central Texas. But a smallpox epidemic in 1706 almost wiped out the Indians in San Juan Bautista and San Bernardo, and it spread to the natives north of the river with equally disastrous effects. The missionaries had to recruit new neophytes to replace those fallen in the epidemic, with the result that there may have been few Coahuiltecan left in south-central Texas to oppose the entry of Apaches (Weddle, 1968: 71-74). Within a de-

cade or so Plains Apaches were in possession of the upper Nueces Valley and presumably the hill country to the north and west.

With the return of the Spaniards to New Mexico in 1692 and their growing concern about the French threat from the east and northeast, interest in the Plains Apaches was considerably heightened. This stimulus, combined with a growing familiarity with Apache groups, resulted in the old generic names, such as Vaqueros, being replaced with more specific designations. Most of the new names were derived from the localities in which Apaches were found or were those of leaders. Since many, if not most Apache groups were soon displaced and old leaders died, it is difficult and often impossible to trace Plains Apache subdivisions through time. Nevertheless, in general terms it is clear that at the opening of the eighteenth century two major groups of Apaches were in the plains. One group was ancestral to the Mescaleros of more recent times, the other ancestral to the Jicarillas, Kiowa Apaches, and Lipans.

The Mescalero group extended from the Rio Grande in New Mexico eastward well into the plains. Their northern border seems to have been in the vicinity of the Canadian River Valley; their southward extent is but vaguely known, but within a few decades of 1700 they were ranging throughout most of southwest Texas and into Mexico (Thomas, 1935: 50; Schroeder, 1960). The Spaniards in Texas were familiar with a number of Mescalero divisions, each of which seems to have been composed of a congeries of bands. So far as is known these divisions had no political or tribal reality to their members. The Faraones (the Spanish term for Pharaoh, Hodge, 1907: 453; Schroeder, 1960: 13) were one of the major Mescalero divisions. First mentioned by Governor Vargas in 1692 during the reoccupation of New Mexico, they also were well known to the Spaniards in Texas in the eighteenth century, and seem originally to have been the northernmost division. The Spaniards in Texas also knew what appears to have been a Faraone subdivision, perhaps the easternmost band, the Pelones (Round or Bald Heads), since they referred to them as the Pelones Faraones" (Jiménez, *et al.*, 9/19/1763). The Pelones were sometimes mentioned as a separate entity, however, and Dunn (1911: 202, 263) lists them as a Lipan subdivision. Another

Mescalero subdivision, the Natagé, (also Nataje, Nataina) was sometimes referred to by the Texas Spaniards as the Apache proper (Jiménez, *et al.*, 9/19/1763). They had somewhat closer ties to the Lipans than did the other Mescalero subdivisions and originally seem to have ranged to the south of the Faraones. Their name is apparently derived from their Lipan designation, Natahe, which means mescal people (Hodge, 1907: 846). The San Lorenzo missionaries were also familiar with a group they designated as Mescalero, the people under whose name these groups eventually came to be known.

At the beginning of the eighteenth century the ancestors of the Jicarilla-Lipan-Kiowa Apaches of more recent times were scattered widely in the plains. Archeologically known as the Dismal River Aspect, they occupied the region from roughly the 100th meridian on the east to the Rocky Mountains on the west, and from the Black Hills in the north to about the Canadian River Valley in the south (Gunnerson, 1960: 144; 1968: 167-170). Two expeditions traversed parts of this region in the early part of the century and these supply considerable information about its inhabitants. In 1706 Juan de Ulibarri was dispatched to bring back a group of Picuris Indians who had revolted and sought sanctuary with the Cuartelejo Apaches in the plains, and in 1719 Governor Antonio de Valverde led a campaign against the rampaging Utes and Comanches, both expeditions passing through much of the same territory (Thomas, 1935: 59-77, 110-133; Schroeder, 1959b). Near present Cimarron, New Mexico, on the east side of the Sangre de Cristo Mountains, Ulibarri encountered Jicarilla, Conejero, Ocho, and Rio Colorado Apaches. The affiliations of all but the Jicarillas are in doubt, Thomas (1935: 17) listing them as Jicarillas, Schroeder (1959b: 5-7; 1960: 15-16) suggesting that the Ochos (or Achos) were the westernmost band of Lipans. These Apaches were friendly, but they warned Ulibarri that hostile Penxayes, Flechas de Palo, Lemitas, and Nemantinas "blocked the way eastward" (Thomas, 1935: 17). Consequently, Ulibarri turned to the north and after several days encountered friendly Jicarilla, Flechas de Palo, and Carlana Apaches. Along the Purgatoire in southeastern Colorado and extending in scattered groups to the Arkansas were Penxaye Apaches. Whether the Penxayes were Jicarillas (or rather,

were observed by and enumerated as Jicarillas in later times), or were affiliated with some other Plains Apache division is not entirely clear. Apparently they should be considered a Jicarilla subdivision (Thomas, 1935: 263, note 13).

To the northeast and east of these groups were Cuartelejo Apaches, first mentioned under this name by Father Escalante, who reported that some Taos Indians had fled to the plains and fortified themselves in a place that on this account became known as El Cuartelejo. It has been suggested that this hegira took place between 1639 and 1641, since Taos had revolted and a priest had been slain in this period (Hodge, Hammond, and Rey, 1945: 284). In any case, the culturally similar, but scattered and loosely organized Apaches of eastern Colorado and western Kanzas, north of the Arkansas River, were given a Spanish name for a geographical spot (Wedel, 1959: 422 ff.). When Valverde in 1719 visited El Cuartelejo ". . . another nation or ranchería of the same Apaches whom they called the Calchufines" was there, as well as a band of Paloma Apaches, whose chief had a gunshot wound (Thomas, 1935: 130). Valverde stated that there were more than two hundred tents, and "more than three hundred Indians under arms . . . Together with the crowd of women and children there were probably more than one thousand persons." The Paloma Apaches, according to the testimony of the wounded chief, had lived "on the most remote borderlands of the Apaches," which Thomas (1935: 132, 271) suggests was in northeastern Colorado, probably along the South Platte. The Pawnees and/or Wichitas had ambushed the chief's people while they were planting corn, and only nightfall permitted their escape, according to the chief. The gunshot wound of the Paloma chief suggests one reason why these Indians had become more aggressive in their warfare with the Apaches. This defeat also seems to mark the beginning of a Paloma and Cuartelejo retreat southward.

References to the Apaches of El Cuartelejo and associated peoples, such as the Calchufines and Palomas, disappear in the mid-eighteenth century, the last documents to mention them being dated 1752 and 1754 (Thomas, 1940: 124, 135). The probabilities would seem to be that those who survived were eventually given new designations or were assimilated by other Plains Apache groups. Some, no doubt, were assimilated

by the Jicarillas and are represented among their five surviving subdivisions (Schroeder, 1959b: 63). It seems likely that one of the Cuartelejo bands, or remnants of one, became the Kiowa Apaches of later history, and it is possible that various bands or fragments of bands joined the Lipans or were enumerated with them.

Unfortunately, the relatives of the Cuartelejo and Jicarilla Apaches who ranged to their south and southeast were not clearly distinguished by the New Mexican Spaniards in the early years of the eighteenth century. The first reference to the Lipans by name may have been in 1715 by Don Gerónimo, a Taos Indian, who said that "on the road to the plains there are some rancherías of Apaches whom they [the inhabitants of Taos pueblo] call Chipaynes or Limitas, who in their language are known as Sejines, and that these and the Faraon nation are one and the same" (Thomas, 1935: 80). Schroeder (1960: 17) argues that the Chipaynes (or Limitas or Treméntinas) were not Faraones since they had been distinguished from them by Governor Cubero in 1702. Certainly the similarity between Chipayne (also appearing as Cipayne and Chilpaine) and Lipan is undeniable. It will also be recalled that Ulibarri in 1706 was warned about hostile Apaches barring the way to the plains when he was on the eastern slopes of the Sangre de Christo Mountains. He subsequently met Penxaye and Flechas de Palo Apaches, who turned out to be friendly, but he did not encounter the Limitas and/or Treméntinas.

Don Gerónimo stated that to find and punish the Chipaynes Apaches, who had been raiding the pueblo country from their home on the Canadian River, it would be necessary to attack their rancherías

... in the middle of August when the moon is almost full. At this time they are shaking out the grain from the ears of corn. Having finished doing this and having buried it beneath the soil, they all go on a hunt for buffalo where they maintain themselves until they return to sow which is at the end of April or the beginning of May. There they remain until they cut it. They will not find them in any other manner since they live where there is hunting and then invade this province for corn when they need it (Thomas, 1935: 81).

Hurtado's subsequent expedition late in August against the Chipaynes on the Canadian River was unsuccessful, however (Thomas, 1935: 94–

98). This seasonal cycle was characteristic of the Lipans, but it also applied to various Mescalero subdivisions, so that no decision about their identity can be made from this information.

The earliest usage of the name Lipan by Spaniards in Texas is not known. It apparently gained currency in the 1720's, and it was written with but a few spellings and no known synonyms—Ipande, Ypande, Hipandis, Lipanes, Hipanes, Lypanes, and the like. The name is said to be derived from the personal name of a band chief to which the suffix (n'de), signifying people, has been added (Hodge, 1907: 768–769; Castañeda, 1935: 16; Swanton, 1952: 322).

All of these Apaches, the Jicarillas and their subdivisions, the Cuartelejos and those affiliated with them, and the Lipans, were linguistically and culturally similar to one another. Their dispersal at the end of the seventeenth century probably has led to the relatively minor cultural differences which distinguish their modern descendants. The Jicarillas, driven into close contact with the Pueblo Indians, adopted some southwestern traits; the Kiowa Apaches, closely linked with the Kiowas in the nineteenth century, remained a thoroughgoing Plains people, as did the Lipan Apaches. (This characterization is at odds with the traditional view of the culture-history of these peoples. See, for example, Opler, 1936, 1940, 1945; Kroeber, 1947: 37; Lowie, 1963: 9; Brant, 1949, 1953; Sjoberg, 1953b: 97–98; but also see Schroeder, 1959a: xxx–xxxi, and Gunnerson, 1956).

The Lipans were a semi-nomadic, tipi and wickiup-dwelling (or hogan-dwelling ?) Plains people whose subsistence was based primarily on bison. The principal hunting seasons were fall and spring, at which times they conducted large-scale communal hunts. Many other animals, including deer, antelope, and bear were also hunted. The women raised corn, beans, squash, and tobacco in valley bottoms, and the produce from their gardens was an important, though secondary subsistence activity. After the Lipans adopted horses and were driven from their old lands, the importance of agriculture dwindled. Wild plant food may have taken the place of some of the domesticated crops they no longer raised, but gathering activities apparently were always important. Prickly pears, other cacti, mesquite beans, and agaves were sought, as well as other wild plant foods. (For a more complete

description of Lipan culture see Opler, 1936, 1940, 1945; Sjoberg, 1953b; Newcomb, 1961: Chapter 5.)

Matrilocal-extended families were the basic social unit in Lipan life. These families—composed of parents, unmarried sons, daughters, their husbands, and the children—worked and lived together. They may have been the scattered local groups, referred to as *rancherías* by the Spaniards, which farmed in the valleys and were so vulnerable to enemy attack. Or, perhaps several extended families which habitually stayed together and cooperated with one another, may have comprised these *rancherías*.

During the mission years the political entity with which the Spaniards dealt was the band. Bands were named for their leaders, and strong band chiefs sometimes had considerable authority, including the ability to invoke the death penalty. Bands were formed around a nucleus of extended families, but life had been so disrupted that most bands were composites, that is made up of remnants of several bands or families, even including Apaches who were not Lipan. Bands normally numbered about 400 persons, if those which settled at San Lorenzo and Candelaria were typical. Since the missionaries reported between 3,000 and 5,000 Lipans, and there seem to have been twelve Lipan bands in the Central Texas area during the mission years, confidence in the figure of about 400 persons per band is enhanced. Such band size may have been an optimal number of persons for bison hunting, or it may have been a response to other factors. During the mission years many Lipan bands also maintained close ties with one another, and at least occasionally joined forces for hunting and warfare. On at least one occasion all of the Lipans in Central Texas apparently joined forces for a great hunting and fighting venture. Lipan bands also united temporarily with other Apaches, usually the Natagés, for purposes of hunting and fighting.

By the eighteenth century if not before, the Lipans were a militaristic people. Like other Plains Indians, they preferred small raiding parties, and they were expert guerrilla fighters, though they also engaged in a number of large-scale defensive and offensive battles. Scalps were taken and scalp and victory dances were held for successful war parties. Captives were often tortured and killed and occasionally eaten. Women and children were frequently adopted.

The Lipans believed in a vaguely defined supreme supernatural power, but the important supernaturals, so far as individuals were concerned, were lesser celestial and other deities who were propitiated as the individual saw fit. In common with other Apaches, the Lipans feared the ghosts of the dead and believed that the after-world was nearby and that they would live there with their relatives after death. Theoretically anybody could become a shaman through mystical or visionary experiences, but they seem not to have been common. Power thus obtained could be transferred, but was not ordinarily passed on until the holder was old. Shamanistic rites were conducted to cure the sick, to help obtain game, to bring misfortune upon enemies, to foretell an enemy's approach, to control weather, and other things.

The missionaries at San Lorenzo made a number of estimates of Lipan population, varying from a low at "at least 3,000 of all ages and sexes" (Jiménez and Cuevas, 2/25/1763), a population of 4,000 (Jiménez, 12/26/1764), to a total population of 5,000 (Jiménez, Baños, and García, 2/7/1762). But it is doubtful that the missionaries were acquainted with all Lipan bands, since their *rancherías* at this time were scattered out as far to the west as southeastern New Mexico (Castañeda, 1939: 187–190). It is also probable that their population had been drastically reduced during the first half of the eighteenth century, and it continued to decline during the mission years. Two epidemics of smallpox were recorded during the mission years, and at least one of them was serious. Losses in warfare also were heavy, not because abnormal numbers of warriors were slain, but because women and children captured by Spaniards, Comanches, and other Indian enemies were almost never returned. Conversely, Lipan numbers were augmented to an unknown but probably small extent during the mission years when individuals from other Apache subdivisions joined them.

The southeastward movement of the Lipans took them on a collision course with the northward moving Spanish frontier and into the territory of other Indian groups who quickly engaged them in battle. In the early decades of the eighteenth century the entire northern Spanish frontier from El Paso to the Gulf came under repeated attack from Mescaleros and Lipans. Which Apaches were responsible for any specific

raid is usually impossible to determine, in part because the two groups often joined forces. The Apaches were particularly eager to drive off Spanish horse herds, but they also stole their livestock, harassed mission Indians, and killed a substantial number of Spaniards. The Spaniards replied in kind, killing warriors when they could and frequently selling captives, who were mostly women and children, as slaves (Dunn, 1911).

As the Lipans moved into central and southern Texas they also encountered Coahuiltecan remnants and scattered bands of Tonkawas, the original inhabitants of the region. A poorly known people, the Tonkawa tribe came into being during the eighteenth century and was composed of remnants of what had been a number of autonomous groups, the Tonkawa proper, Mayeye, Yojaune, Ervipiame, and the smaller and less well known Cavas, Emet, Sana, Toho, and Tohaha (Sjoberg, 1953a; Newcomb, 1961; Chapter 6). In 1745 chiefs of the *Ranchería Grande* Indians (chiefly Ervipiames), Yojaunes, and Mayeyes asked that missions be established for them, and their request was granted with the founding of three missions on the San Xavier River (San Gabriel), near modern Rockdale in Milam County, Texas (Fig. 76). Mission San Francisco Xavier de Horcasitas was founded in 1746 and made permanent in 1748, and the missions of San Ildefonso and Nuestra Señora de la Candelaria were established soon after. They incorporated remnants or bands from a number of different tribes including the Atakapan Bidais (Bolton, 1914b).

The missions were not successful; Apache raiders harassed and drove away the mission Indians; Pedro del Barrio y Espriella, the governor, quarreled with the missionaries; and Lieutenant Juan Galván, in command of a detail of thirty soldiers and charged with protecting the missions, sided with the governor. His soldiers mistreated the Indians and encouraged them to be insubordinate and to run away. In 1750 a smallpox epidemic caused the death of forty Indians. In 1751 Presidio de San Xavier de Gígedo was established to protect the missions and Captain Felipe de Rábago y Terán was named to command it. Rábago immediately suggested moving the missions to the San Marcos River and was soon in open conflict with the missionaries when they gave protection to the husband of a woman with whom the commander had had an adulter-

ous affair. The situation on the San Xavier continued to deteriorate under Rábago's command and finally was climaxed by the murders of Father Ganzabal and Juan José Ceballos, the cuckolded husband. Rábago was relieved of command and imprisoned for a time. While waiting for the final disposition of his case he was made commander of the garrison of Presidio del Sacramento in Coahuila. Eventually, eight years after the murders, Rábago was cleared and restored to his command, as it turned out, of the presidio on the San Sabá (Castañeda, 1938: 241-338).

The Tonkawas and portions of other tribes that had been in the missions on the San Gabriel were frustrated and ultimately estranged by the actions of the Spaniards. Although some of them became avowed enemies of the Spaniards, they did not become allies of the Apaches. Even before the missions were established, Tonkawas had traded with the French and were in friendly contact with the Wichitas and Caddos. Now, more or less abandoned by the Spaniards, equipped with firearms by the French, and finding allies in the Wichitas and Caddos, they constituted a dangerous enemy, and an enemy which was to exact its retribution from the Spaniards.

Far more powerful than the Tonkawas were the tribes forcing the Lipans southward—the Wichitas and Comanches. They were also the most potent and destructive enemies the Spaniards were to face in the southern plains. Wichita is used here in a generic sense to include a number of autonomous but closely related sub-tribes, the Taovayas, Tawakonis, Iscanis, Kichais, Wichita proper, the Flechazos (a sub-tribal group of the eighteenth century), and the Wacos, who surface in the nineteenth century and may be latter-day Flechazos or Iscanis. The Kichais spoke a distinct Caddoan language and the other subdivisions, slightly varying dialects of Wichita, another Caddoan language. The probabilities favor an aboriginal population of more than 10,000 persons, perhaps triple this figure, scattered out in fifteen to twenty villages. Until the last third of the eighteenth century, population seems to have continued in excess of 10,000 persons, but with a reduction in the number of villages (Newcomb and Field, 1967).

In a broad sense Wichita culture was like that of a number of tribes on the eastern margins of the plains. The Wichitas were a gardening and

hunting people, remaining in their grass lodge villages throughout the spring and summer while the women tended their fields of corn, beans, and squash. In fall and winter the villages were abandoned and the Wichitas became roving hunters, living in tipis, the men hunting bison, deer, and other game. This dual subsistence was practiced before the Wichitas acquired horses and it persisted up to the reservation period. Each village had a chief, a sub-chief, and a number of lesser officials. Although villages were politically independent, some large villages with outstanding leaders exerted considerable authority over lesser ones. Chiefs were elected by an informal council of eminent warriors, and they functioned primarily in the domain of foreign affairs, internal matters being guided by the matriarchal families which were the cornerstones of Wichita society (Newcomb, 1961; Chapter 10; Newcomb and Field, 1967).

Coronado encountered villages of Wichitas in 1541 within the great bend of the Arkansas River in what is now south-central Kansas. About the beginning of the eighteenth century, as a result of Osage pressure from the north, Comanche pressure from the west and northwest, and possibly for other reasons, the Wichitas, or at least the more northerly villages, began a southward migration (Harper, 1953a, b, c; Newcomb and Field, 1967). By 1719, when visited by Claude Du Tisé, Sieur Du Rivage, and Bénard de la Harpe, the Wichitas were scattered out in the river valleys from the vicinity of the Kansas-Oklahoma border south through eastern Oklahoma into Texas. The Wichita withdrawal to the south was to continue for another century, with villages eventually being established as far south as Waco on the Brazos River in Central Texas (Margry, 1888: 309-315; Harper, 1953a, b, c; Wedel, 1959: 526-634; Bell and Baerreis, 1951: 91; Bolton, 1914a; Lewis, 1924; Harris, *et al.*, 1965: 287-361; Newcomb and Field, 1967).

The Osages, made militarily superior by their abundant supply of French firearms, could not be repulsed until the Wichitas also acquired firearms and learned how to use them effectively. And the traditional enemies of the Wichitas, the Plains Apaches, possessed a plentiful supply of horses, making them more formidable than ever. The Wichitas also had acquired some horses and learned the art of horsemanship before the opening of the new century, but

horses were relatively scarce and remained a precious commodity. Though the Wichitas were obviously in a precarious situation in the early decades of the century, their relationship with the Osages and other enemies to their rear seem to have stabilized soon after French traders supplied the firearms they so badly needed. The acquisition of French firearms also gave them the upper hand in their long-standing conflict with the Plains Apaches. Finally, in 1746 or 1747, as has been mentioned, the Wichitas were able to enter into a mutually beneficial alliance with the Comanches, an alliance which continued in effect as long as both peoples maintained their independence (Newcomb and Field, 1967: 256-257; Newcomb, n.d.). This alliance removed an increasingly powerful enemy from one flank and assured the Wichitas of a continuing supply of horses. As a result of these events, by mid-century the Wichitas had become a very powerful force in the southern plains. Ensnared in villages along the Red River and acting as middlemen between the French and the tribes to the west, primarily the Comanches, they and their allies were able to thwart the Spanish and their new Lipan allies when an attempt was made to infringe upon their domain.

Early in the eighteenth century the Comanches entered the struggle for the southern plains. These ill-equipped hunters and gatherers originated in the mountainous country north of the headwaters of the Arkansas. Soon after acquiring horses in the seventeenth century they crowded and shoved their way into the rich bison plains of what is now eastern Colorado and western Kansas (Wallace and Hoebel, 1952: 8). They appeared in New Mexico in company with Ute Indians early in the eighteenth century and were already engaged in a vicious struggle with Plains Apaches. There are reports of a nine-day battle between Comanches and Apaches sometime between 1720 and 1723 on the plains east of Pecos in which the Comanches bloodily established their military supremacy. Dunn (1911: 220) says the battle took place on the Wichita River and that the defeated Apaches fled to the upper Colorado and Brazos rivers. In 1724 the Comanches made a massive assault on a ranchería of Jicarillas and succeeded in capturing half their women and children while killing most of the men (Bancroft, 1889: 239; Bolton, 1914a, 25; Thomas, 1932: 60). They apparently fought

the Wichitas on the upper Arkansas River, and attacked the Pueblo and Spanish settlements in New Mexico when it suited them. But they could not acquire an adequate supply of the one item which would ensure mastery of the southern plains—firearms. The Spaniards would not sell or trade firearms to the Indians, and the Indians to the east of the Comanches who were able to secure them were enemies. In short, the Comanche motivation to form an alliance with the Wichitas was as powerful as the one driving the Wichitas into the arms of the Comanches.

Divided into a dozen or so loosely structured bands with shifting membership, the Shoshonian-speaking Comanches depended heavily on bison for food, clothing, and other things. Gaining the plains by force of arms, and prospering by raiding the fighting, almost every aspect of life became intertwined in one way or another with war. Though possessing few formal governmental institutions and lacking a tribal chief and tribal council, nevertheless the Comanches were able to establish alliances with other tribes which were observed by all their bands. Although no study has been made of their population during the eighteenth century, it apparently was comparable to that of the Wichitas and was probably increasing rather rapidly.

To the east of the migrating Lipans, and as bitter enemies as the Wichitas and Comanches, were three Caddo confederacies. The largest and most westerly, located in the upper Neches and Angelina river valleys, was that of the Hasinai, composed of eight tribes. The Kadohadacho Confederacy, composed of four tribes, was situated in the vicinity of the great bend of the Red River in northeast Texas and southwestern Arkansas, and the third, the Natchitoches, was situated in the neighborhood of Natchitoches, Louisiana. The tribes of these confederacies, plus several independent tribes, shared a common language, Caddo, and were quite similar to one another in other aspects of culture. They were expert gardeners who raised corn, beans, squash, tobacco, and sunflower seeds. Planting and clearing of the fields was a communal enterprise, gangs of men and women laboring separately. Although animals were secondary in subsistence, winter hunts were made in the prairies to the west for bison; deer, bear, and other game were also hunted. Because of their location, the tribes of the Hasinai Confederacy seem to have utilized bison more than did other Caddos, and conse-

quently came into closer contact with the Plains Apaches and other bison-hunting tribes. The Caddos lived in grass lodges similar to those of the Wichitas, though some were mud-plastered as was the common custom of other peoples in the Southeast. The confederacies were headed by priestly rulers who inherited their office; below them were the tribal chiefs, and under the tribal chiefs was a corps of lesser officials (Swanton, 1942; Newcomb, 1961, Chapter 11).

These settled, prosperous, barbaric Caddo theocracies were very different from the nomadic and often impoverished Coahuiltecan for whom the Spaniards were establishing missions during the last half of the seventeenth century in northeastern Mexico. Apart from the need to counter French expansion, it is not surprising that the missionaries should want to attempt their conversion; much might be gained with relatively little effort. But the missions established among the Caddos were never successful. The Indians turned hostile before San Francisco de los Tejas was a year old, and they forced its abandonment in 1693. The other mission in Hasinai territory, Santísimo Nombre de María, had already been flooded out. When the missionaries returned to East Texas in 1715, they were hardly more successful, and French competition had grown considerably. By 1731 only the presidio of Los Adaes was left as an isolated post in East Texas. The animosity the Caddos developed for the Spaniards was heightened when missions were established for the Apaches. War parties of Caddo Indians, predominantly Hasinai, were active in harassing the Spaniards at San Sabá and San Lorenzo, and in attacking the Lipans throughout Central Texas.

* * * * *

In sum, in the vast region between the French and the Spanish, including much of what later became Texas and Oklahoma, lived a considerable number of native tribes of varying culture and origin. The relationships between these peoples during the seventeenth and eighteenth centuries were complicated and constantly changing, as were their relationships with the European powers who directly and indirectly were responsible for the revolutionary changes taking place in their lives. It was against this backdrop of change, violence, and instability that the Lipan Apaches came into Central Texas, cast up by the storm of Indian conflict against the breakwater of the Spanish frontier.

The Origins of the Mission

In the fall of 1723 the first of a number of campaigns was finally mounted against the Apaches, whose marauding from San Antonio to San Juan Bautista and beyond had reached serious proportions. On this occasion Apaches had driven off eighty horses from the presidial corral of San Antonio de Béjar, despite the fact that the gates were locked and the corral guarded by ten soldiers. Incensed at such boldness, the captain of the presidio, Nicolás Flores y Valdés, pursued the thieves but was forced to return for reinforcements. Two days later he again set out, this time with thirty Spaniards and thirty mission Indians. Doggedly pursuing the Indians, thirty-six days later and 130 leagues toward the northwest (apparently in the vicinity of modern Brownwood, Fig. 76), the force came upon a ranchería of some 200 Apaches. A six-hour battle followed in which thirty-four Indians and a chief were killed, twenty women and children captured, and about 120 horses and mules together with plunder recovered. Three Spaniards including Captain Flores were wounded (Dunn, 1911: 207–209).

One of the captured women was sent back to her people from San Antonio with a message that the Spaniards wanted to make peace with the Apaches. About three weeks later the woman returned to San Antonio bringing with her a chief, his wife, and three other Apaches. The chief indicated that he and four other chiefs would come to San Antonio to make peace. But rumors were soon heard in San Antonio that the Apaches were talking peace only as a ruse to get back the captive women and children. Finally, in December, a group of thirty Apaches came in. Father Joseph González allowed them to enter the mission and urged Captain Flores to release the prisoners to them. Flores refused to do this, insisting that he would not release them until all of the chiefs had agreed to make peace. The argument between the two Spaniards became so heated that the alarmed Apaches departed, leaving behind a twelve year-old girl as a hostage. They also had said that in the spring four chiefs would come in to make peace, but that the fifth chief had no desire to be a friend of the Spaniards. There was a lull in the raiding that winter, but the chiefs did not come to San Antonio to make peace and in March 1724, hostili-

ties were resumed when a soldier was killed near San Antonio (Dunn, 1911: 209–216).

Between 1726 and 1730 Apache raids in the San Antonio vicinity declined almost to the vanishing point, then as mysteriously, hostilities were renewed in 1731. In January of that year, two priests with a small party, and escorted by four soldiers, were attacked by fifty Apaches while on their way from San Antonio to the Rio Grande. A woman was killed and a boy captured. From that month until April there were many raids in the San Antonio vicinity and many horses and burros were taken by the Apaches. There was a lull between April and August, perhaps while the Apaches were raising and harvesting their crops, but in September, in broad daylight they got away with 60 horses from San Antonio. Don Juan Antonio Pérez de Almazán, now captain of the presidio, sent a sergeant and five soldiers in pursuit of the thieves. When he overtook them a league from the presidio, with the eighteen additional men he could hastily assemble, the advance party was in a desperate fight with about forty Indians. But no sooner did Almazán arrive than 500 more Indians emerged from their hiding places, all mounted and well armed. The ensuing battle lasted for two hours, the small Spanish force finally dismounting at the foot of a tree, prepared to sell their lives as dearly as possible. Though the Spaniards were surrounded, with two dead and thirteen men wounded, and at the mercy of the enemy, the Apaches suddenly broke off the engagement and retreated (West, 1904: 40–41; Dunn, 1911: 223–227).

In 1732 another military campaign was waged against the Apaches. Don Juan Antonio Bustillo y Ceballos, then governor of Texas, led an expedition of 157 Spaniards and sixty mission Indians, with 140 pack loads of supplies and 900 horses and mules, from San Antonio into the unexplored hill country of what is now Central Texas. Scouts discovered an Apache ranchería, apparently on the San Sabá River, on December 8, and after approaching it during the night, Bustillo attacked it with 100 picked men in the morning. The surprised Apaches fought gamely, waiting for the Spaniards to fire, then closing in while the soldiers reloaded their muskets. But

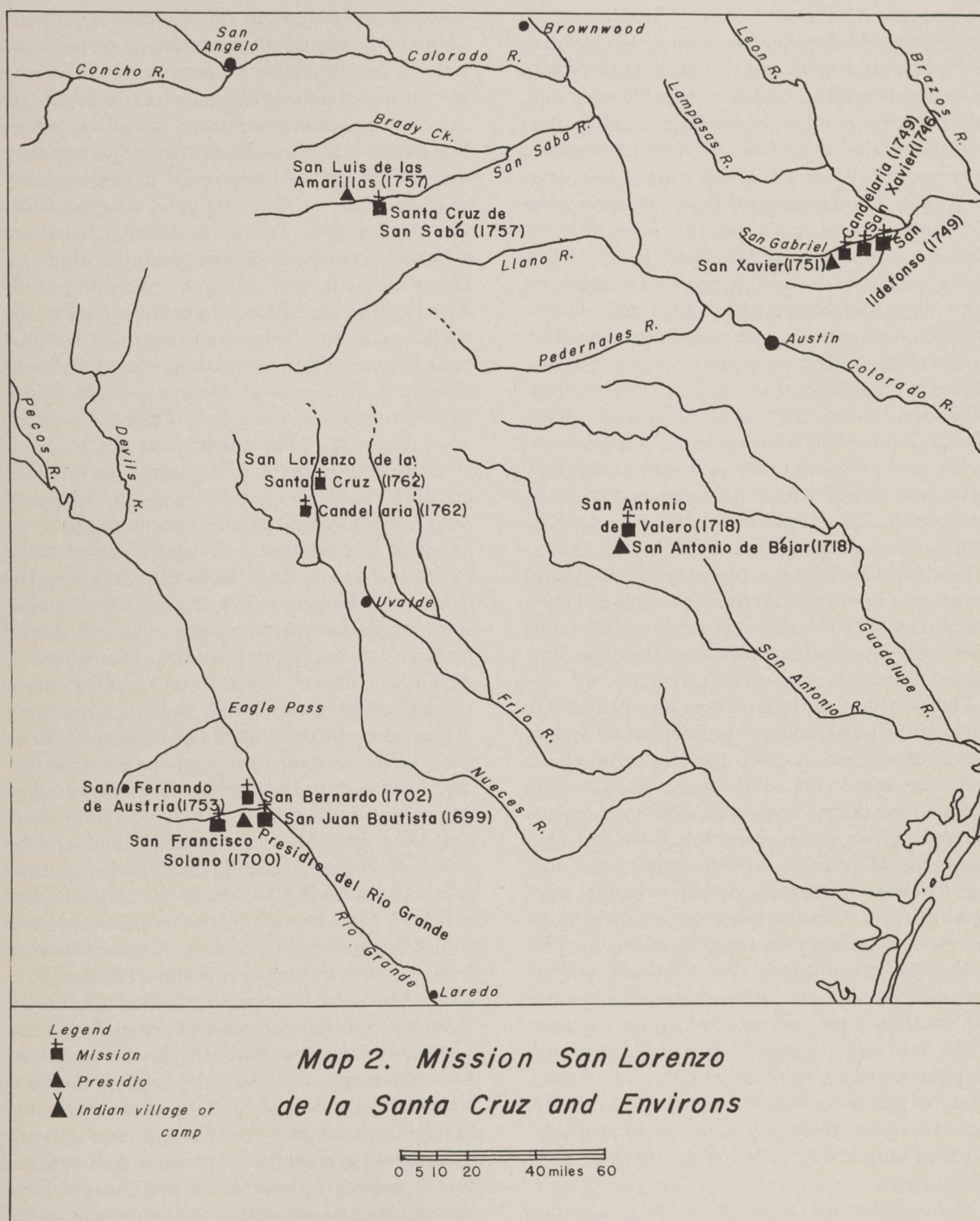


Fig. 76.—Mission San Lorenzo de la Santa Cruz and environs.

bows and arrows could not carry the day against Spanish firearms, and after a five-hour battle the Apaches withdrew. Bustillo claimed that 200 Apaches were killed, but since they were carried off by their comrades and thrown into the river, the estimate may be inflated. Thirty women and children were captured along with 700 horses and 100 mule-loads of booty. Seven Spaniards were wounded, one of whom died a few days later. The Spaniards estimated that there were 700 enemy warriors representing four different "tribes." They were camped in as many neighboring rancherías, spread out along the river for more than half a league (about a mile and a third) and numbering more than 400 tipis. The names of the tribes were the "Apaches" (Mescaleros), "Ypandis" (Lipans), "Ysandis" and "Chentis" (Dunn, 1911: 230-237; West, 1904: 41-42; Castañeda, 1938: 35-40). The affiliations of the last two groups are unknown; they had just joined forces with the Lipans and Mescaleros, and had not been known before to the San Antonio Spaniards (Dunn, 1911: 236-237). Father Gabriel Vergara, president of the Querétaran missions of San Antonio, accompanied the expedition, and thereafter strongly favored the establishment of missions as a means of pacifying the Apaches.

The fact that military forces had penetrated the heart of Lipan country did not put an end to Apache raids. San Antonio was raided time and again between 1736 and 1739; soldiers and settlers were killed and much livestock driven off. During this period, however, Cabellos Colorados (Red Hair), one of the most persistent and feared raiders in the San Antonio vicinity, was captured with some members of his band near San Antonio. They were imprisoned from December 1737 until September 1738, and during this time San Antonio suffered no depredations. But in October the raids started again, and as a result, the chief, his two year-old daughter, and the other captives, were sent to Mexico City on orders of the governor. As Dunn (1911: 247-248) remarks, these Apaches were probably banished into slavery in the West Indies or some similar place.

In the winter of 1739, Captain José de Urrutia of the Presidio of San Antonio de Béjar, an old Indian fighter and dedicated foe of Apaches, led a force once again into the San Sabá River country. The expenses of his campaign were to be

paid for by the sale of captives the expedition might take, and all the members of the expedition were to share in the division of plunder. Though details of the campaign are lacking, Urrutia seems to have ridden into the hill country through Bandera Pass. He surprised an Indian camp somewhere near the place where Presidio de San Luis de las Amarillas was later built (Fig. 76), and succeeded in taking many captives (Dunn, 1911: 249; Castañeda, 1938: 46-47). In 1745, Toribio de Urrutia, who had assumed command of the presidio after his father's death, led another expedition into Apache territory. More than 200 miles to the northwest of San Antonio and north of the Colorado River, his force surprised a scattered ranchería of Lipans and Natagés. Since many warriors were away, a large number of captives was taken easily (Dunn, 1911: 251-252).

These campaigns did not pacify the Apaches and the conflict might have continued many more years had not the missionaries strongly objected to the militant, retaliatory policy of the military. As early as 1725, Father Francisco Hidalgo, who had served in the East Texas missions, suggested that the answer to the Apache problem lay in the establishment of missions in which to convert them. Subsequently, other Franciscan missionaries in San Antonio were disturbed by the actions of the Spanish soldiers, particularly as their campaigns became increasingly difficult to distinguish from slave raids. After Bustillo's campaign in 1732, Father Vergara led a drive for a new Indian policy, and for a time succeeded in getting the Apaches to trade peacefully with the settlers in San Antonio. But in March 1733, two soldiers were killed and their bodies stripped of flesh only a short distance from the San Antonio presidio (Dunn, 1911: 237). Apaches were responsible, and as a result, Father Vergara's efforts went for naught. Father Benito Fernández de Santa Ana, who succeeded Father Vergara, unsuccessfully opposed the elder Urrutia's campaign of 1739, and following it he bitterly pointed out that the purpose of such campaigns was really to plunder and enslave the Apaches, and as such they could have nothing but evil consequences (Castañeda, 1938: 47). Several years later, in 1743, Father Santa Ana presented a petition to Viceroy Conde de Rivilla Gigedo, in which he discussed the advantages of making peace with the Apaches and

suggested that a presidio be established in their country, thus relieving the pressure on San Antonio (Castañeda, 1938: 41–43). There was no immediate reaction to this petition, and the raids on San Antonio were heavier than ever in the next several years, probably in retaliation for the captives taken by the Spaniards.

The younger Urrutia's campaign in 1745 was, it seems, primarily a slave-hunting expedition, and vengeance-seeking Lipans and Natagés soon descended on San Antonio. But before the Apaches resumed hostilities they dispatched four women to notify the Spaniards that the peace was ended, apparently a unique act in the checkered relationships between the Spaniards and Apaches. In the next three weeks nine people were killed and robbed in the San Antonio vicinity; only Mission Concepción under Father Santa Ana was not molested. Hostilities were climaxed on June 30, 1745 when 350 Lipans and Natagés, including their women and children, gathered to attack San Antonio. The Apache plans seem not to have been well laid, and the Lipans apparently had little stomach for the affair. Before the Indian operation was well launched, a boy discovered them and gave the alarm. Mission Indians quickly came to the aid of the defenders of the town, but when they left the mission so did a Lipan captive who quickly joined his people. The Lipan chief, whose daughter was a hostage of Father Santa Ana's, asked the escaped captive how his daughter was being treated. When told that the captives were being accorded every kindness and that the Spaniards wanted to be friends of the Apaches, the chief halted the attack. The Natagé chief strongly opposed such action, but was eventually talked out of further hostilities (Dunn, 1911: 252–253).

During the next few years San Antonio continued to be raided sporadically, but some Lipan chiefs were also persistent in their requests that missions be established for them. Urrutia in February 1749 conducted another expedition into Indian country, quickly overrunning a ranchería but capturing only three old women and five children. While he was absent a large number of cattle was stolen from Mission Concepción, and in March he led another campaign. On the Guadalupe he swept down on a ranchería of Apaches, but most of its warriors were away on a bison hunt. Those left behind—thirty men, ninety women, and forty-seven children—were

captured. The men were imprisoned, the women and children distributed among the citizens and missionaries of San Antonio. Father Santa Ana and Captain Urrutia soon sent two of the women and one man back to their country with a message that if they would thereafter live in peace, the Spaniards would release the people captured on the Guadalupe as well as all of the captives who had been taken previously. The Lipans were delighted at this turn of events; a peace conference was arranged, and in November 1749 peace was concluded between the Spaniards and Lipans in San Antonio (Dunn, 1911: 258–261).

It is probably not coincidental that the Apaches sought peace and requested missions soon after the Wichitas and Comanches concluded their alliance. These northern enemies were acquiring French weapons and ammunition, but the Apaches were still armed mostly with their ancient and inferior weapons. Their situation was desperate and the need for strong allies pressing. Soon entire bands of Lipans were coming to San Antonio, hoping to camp there until missions could be established for them. Father Santa Ana, who was to retire soon because of illness, wanted to build missions for the Apaches on the Pedernales River and move the San Antonio garrison there. But Father Mariano de los Dolores y Viana, who was to succeed Father Santa Ana as president of the San Antonio missions, wanted to establish missions on the Guadalupe River. The matter was referred to the council of Villa de San Fernando (San Antonio). The council opposed any mission for the Apaches anywhere and any move of the garrison from Presidio de San Antonio de Béjar. But Father Dolores was not easily put off. He pointed out to Captain Urrutia that the Apaches were trading peaceably in San Antonio, had committed no depredations in a year, and a chief had returned some stolen horses. Some Apaches had even been baptized. Ultimately, in June 1751, Father Dolores requested the governor, Jacinto de Barrios y Jáuregui, to ask the viceroy either to approve the missions for the Apaches or tell them himself that no missions would be built for them. As a result of this request, suggestions filtered back down through the administrative hierarchy to study the proposals for Apache missions and recommend suitable sites for their settlement.

In 1753 Lieutenant Juan Galván of the Pre-

sidio de San Antonio de Béjar, a few soldiers, and Father Miguel de Aranda were sent to explore Apache territory with a view toward finding a site for a mission. The party explored the Peder-nales River, then the Llano, and finally the San Sabá, where they found a suitable location. Friendly Apaches welcomed the Spaniards and even participated in a religious service at the foot of a cross which was erected at the site of the prospective mission. Galván's report of the expedition suggested that many Apaches would enter a mission located at this site; he also stated that there were indications of rich mineral deposits in the region, and finally he recommended that a large garrison be stationed at the site in order to control the Apaches and defend against the Comanches. Since the garrison at San Antonio would no longer be needed, Galván suggested that it be moved to San Sabá.

Despite Galván's favorable report, the officials in Mexico City were hesitant to proceed with the project. Instead, they dispatched Don Pedro de Rábago y Téran, the new commander of the Presidio de San Xavier on the San Gabriel, to investigate further. Rábago set out with 25 men and Father José López a few days before Christmas, 1754. They followed much the same route as Galván had, and camped on the San Sabá River near the cross. They encountered two Lipan bands on their return journey, their people vowing to enter the mission as soon as it was established. Rábago's report confirmed Galván's; he also mentioned that there might be rich mineral deposits in the region, and he added a recommendation that a strong stone fort be constructed at the site. The reports of possible mineral riches spurred Governor Barrios to dispatch his lieutenant governor, Bernardo de Miranda, to investigate. Late in the winter of 1756 the lieutenant governor and a small party secured a likely looking ore sample from a shaft they dug in a hill of red hematite along Honey Creek in what is now Llano County. Even more exciting, Miranda was assured by the chief of an Apache band whom they encountered on their return trip, that six days' journey above the Llano there was a mountain of pure silver. It was, they said, in Comanche country (Dunn, 1914; Weddle, 1964: 27-29). Though the mineral riches of the San Sabá region were wildly exaggerated and no significant mines were opened, the possibility of their existence un-

doubtedly helped get the mission and presidio established.

While the idea of missions for Apaches was gaining headway in Texas, Father Alonso Giraldo de Terreros, president of the Rio Grande missions, finessed the Texas procrastinators by establishing Mission San Lorenzo near San Fernando de Austria in Coahuila, on December 21, 1754, for the Lipan Apaches. But less than a year later, while Father Terreros was absent, the resident Apaches revolted, burned the buildings, and departed. Located outside the normal range of the Apaches, it made the argument for missions placed in their own territory stronger. But those opposed to Apache missions could point to the difficulty, perhaps impossibility, of ever turning the Apaches into peaceable, tractable mission Indians (Dunn, 1912: 196-200; Weddle, 1968: 247-248).

In the fall of 1756, Colonel Don Diego Parrilla, who was to command the presidio on the San Sabá, was ordered to move the San Xavier garrison to the San Sabá, and to increase its strength to 100 men. There was to be a mission on the San Sabá after all. The winter was spent making arrangements for the new presidio, recruiting soldiers, meeting with Apaches, and dealing with the missionaries, who had split into two feuding factions. A delegation of Lipans, led by two chiefs, visited San Antonio to apologize for the absence of other Apaches. They listed the absent ones as the Natagés, Mescaleros, Pelones, Come Nopales, and Come Caballos (Dunn, 1914: 392). The Lipans continued to assure the Spaniards that they were eager to congregate in missions. In a private report to the viceroy, Parrilla stated that he felt that the Apaches were as treacherous as ever, and that he had serious forebodings concerning the outcome of the venture. Father Terreros, who was to be in charge of the new mission, was upset by what he felt to be Parrilla's dilatory tactics. He, too, had misgivings about the outcome of the new venture, but he was much more optimistic than Parrilla about the willingness of the Apaches to settle in missions. In a letter to his cousin, Don Pedro Terreros, who was giving financial aid to the mission project, he noted that during the winter Apaches had visited San Antonio in bands as large as 300 persons. They had, of course, been presented with gifts (Castañeda, 1938: 395-396).

Finally, in April 1757, the missionaries, the soldiers, and their families, with herders driving large numbers of cattle and sheep, set out for San Sabá. There were almost 400 persons, two-thirds of whom were women and children. They arrived on the seventeenth, and after inspecting the proposed site, Parrilla set out to explore the San Sabá to its source. Not a single Indian had been seen in the vicinity of the future mission and none was encountered along the river. Over Parrilla's outspoken suggestion that the project be abandoned, Father Terreros and the other missionaries insisted on pursuing their plans. Parrilla was forced to send for the soldiers and supplies which had been left behind, and the missionaries began to construct their mission on the south bank of the San Sabá River, about two miles below the spot where Parrilla soon began to build Presidio de San Luis de las Amarillas (Fig. 76). The missionaries first built living quarters and a temporary church surrounded by a stockade of logs. They also cleared fields, planted crops, and began work on an irrigation ditch. The exact location of the mission has never been discovered despite several attempts to do so (Gilmore, 1967). The presidio was even cruder than the mission, consisting of a log stockade with several gun platforms, and a number of mud and straw huts (Dunn, 1914: 396-397).

Father Benito Varela, who spoke the Lipan's tongue, finally went in search of the Indians in May. He learned from soldiers remaining behind on the San Marcos River, who had gotten their information from an Apache woman, that a war party of Tejas (i.e., Hasinai Caddo) Indians had attacked some Lipans on the Colorado, and that the Lipans had fled. At about this same time a Lipan chief, El Chico, visited San Antonio where Father Mariano de los Dolores admonished him for not keeping his promise to settle at the mission on the San Sabá. He told the chief to go there immediately, and El Chico must have done so because he and his people were among the 3,000 Lipans who arrived from the south and camped near the mission in June. But the hopes of the missionaries were quickly dashed as the sullen Apaches stated that they had not come to settle down, but were going on a bison hunt and also were preparing to go to war against their northern enemies. The missionaries were permitted to treat several people who were sick, and the ill brother of a chief was baptized.

El Chico continued to indicate a willingness to settle at the mission, but another chief, Casa blanca, whose brother had recently been killed in the Tejas attack, was bent on retaliation. His was the more persuasive argument; the Apaches soon departed for their hunt and revenge upon their enemies (Castañeda, 1938: 398; Dunn, 1914: 398-399).

The departure of the Apaches was a blow to the morale of the missionaries, and it hardly improved when the Apaches returned several weeks later. They had had a successful hunt and carried much meat with them, but they refused to remain at the mission. If the missionaries had known the Apaches better, they might have realized that while the warriors were away they also had been on a raiding expedition and were now eager to put as much distance as possible between themselves and their enemies. The Apaches hurriedly left the mission and headed south, leaving the missionaries feeling more bereft and useless than ever. In a letter to the viceroy, Father Terreros reported the apparent hopelessness of the situation, but he volunteered to remain if it was thought advisable. Father Trinidad in a letter to Don Pedro Terreros was also pessimistic about the chances of getting the Apaches to settle, and Parrilla wrote the viceroy that there was no chance that the mission would succeed. Parrilla suggested that his garrison be moved to the Llano River in order to exploit the mine Miranda had opened. The viceroy promptly reminded Parrilla that his task was to do everything in his power to make the San Sabá venture a success. But the missionaries soon began to leave. Father Varela from the College of Querétaro left before the summer was out, and fathers Joaquín Baños and Diego Jiménez, who were to labor at the missions on the upper Nueces a few years later, soon requested permission to return to Mexico. Originally, plans had called for three missions, and since only the Queréteran Mission of Santa Cruz de San Sabá had been built and it had no Apaches, it is small wonder that the missionaries were eager to find more rewarding work. By the end of the summer only fathers Terreros, Santiesteban, and Trinidad remained at the mission (Castañeda, 1938: 399-401; Weddle, 1964: 57-60).

That fall small groups of Apaches visited the mission, but none remained for long, all of them continuing on south. It was rumored that north-

ern Indians were preparing an attack on the mission and presidio in order to destroy the Apaches. But it was difficult for the Spaniards to take the rumors seriously for no Apaches had ever tarried for any length of time at San Sabá. No attack came during the cold winter, though the rumors persisted. But during the last days of February the horse herd was stolen. The patrol sent to recover it returned with only one animal and reported that the country was full of armed Indians. Upon receiving this information, Parrilla sent six men to warn a detail he had ordered out to escort a pack train coming from San Antonio. The six men were attacked by a combined force of Tonkawas (both Tonkawa proper and Yojaunes) and Bidais while camped on the Pedernales. Four of them were wounded, but they managed to join the supply train. The corporal in charge of the detail, Carlos de Uruga, was sure of the identity of the attackers, since he had been at the San Xavier Presidio where he had become acquainted with these tribes. Parrilla was sent word of the attack on the soldiers, and ordered out more men to escort the supply train (Nathan and Simpson, 1959: 58-60).

Though Parrilla informed Father Terreros of the stolen horse herd and the attack on the soldiers on the Pedernales, the missionaries were unwilling to abandon the mission and come to the presidio for protection. Finally they agreed to forego working in the fields for the time being and to take some other measures for protection, but they had waited too long. On the next day, March 16, 1757, the mission was attacked and destroyed. The guard stationed at the mission and the missionaries seem to have had no coherent plan for defense, and when the corporal of the guard, Ascensio Cadena, reported that Tonkawas, Bidais, and Tejas Indians, whom he had known peaceably at San Xavier, were among the Indians clamoring to get inside the mission walls, no real defense of the mission was made. The Indians opened the stockade gate and several hundred of them, painted and dressed for war, pushed inside. They were given presents, but soon fell to looting. And after Father Terreros was shot from his horse while attempting to ride out of the stockade in search of a Tejas chief, it was too late to put up effective resistance. The mission was pillaged, then burned. Eight Spaniards were killed including fathers Terreros and Santiesteban. Father Miguel de

Molina, who had replaced Father Trinidad, was severely wounded, and Parrilla reported that five other badly wounded soldiers had small chance of recovering (Nathan and Simpson, 1959: 84-92; Weddle, 1964: 72-78).

The presidio had been weakened as soldiers were absent on escort and other duty, and it was crowded with 237 women and children, as well as all the horses the enemy had not been able to seize. There was no question of the garrison coming to the aid of the mission or issuing forth to attack the Indians. It was too feeble; the Spaniards could only hope the Indians would not make a determined attack on the presidio and overrun it. Fortunately, no attack materialized, though the prairies around the presidio were burned.

Several thousand Indians seem to have been involved in the assault on the mission (Dunn, 1914: 406; Nathan and Simpson, 1959: 82), but more impressive than their number was their diversity. Tonkawas, Bidais, and Tejas (i.e., Hasinai) were very much in evidence and seem to have spearheaded the attack. The Tonkawas and Bidais were probably the same party which had attacked the detail sent out to escort the pack train. Comanches participated in force, marking the first time that Spaniards in Texas had been confronted with these formidable foes. The paramount chief in the affray was also a Comanche. Father Molina gave four bundles of tobacco to this "Great Chief" after he had ridden into the mission compound. Molina said of him:

He was a Comanche, according to the barbarians themselves, and worthy of respect. His war dress and his red jacket were well-decorated, after the manner of French uniforms, and he was fully armed. His face was hideous and extremely grave (Nathan and Simpson, 1959: 86).

Oddly, the Wichitas, who were to bear the brunt of Spanish retaliation for the destruction of the mission, were not mentioned by name as being among the attacking force, probably because none of the Spaniards were familiar with them (Nathan and Simpson, 1959: 54, 69, 73, 82). Significantly, the attacking Indians were plentifully equipped with "French firearms, bullet pouches, and very large powder horns. Others had pikes, and still others, bows and arrows; but most of them had muskets and cutlasses, and all wore the costumes that the Indians wear for war

and raids" (Nathan and Simpson, 1959: 44; see also Dunn, 1914; Weddle, 1964: 72-89).

Parrilla soon proposed that a retaliatory campaign be made to chastise the Indians who had attacked the San Sabá Mission. Among other things, he also suggested that the San Sabá Presidio be abandoned. His proposals were considered by a junta in Mexico in June, 1758. The campaign was approved and Parrilla was designated to lead it, but the proposal to abandon the fort was rejected. Preparing for the campaign was time-consuming, and it was not until August, 1759, that Parrilla was able to lead his army from San Antonio to the presidio on the San Sabá. In his army of more than 600 men were about 380 militiamen and presidial soldiers, 90 mission Indians, 30 Tlascalteco Indians, and 134 Lipan Apaches (Parrilla, 10/7/1759; 11/18/1759; Dunn, 1914). The army soon left the relative safety of San Sabá and headed north into the poorly known country of the enemy. No Indians were encountered at first, only abandoned rancherías, but on October 2, somewhere north of the Brazos River (Allen, 1939: 66), the army surprised a ranchería of Yojaune (Tonkawa) Indians. Parrilla attacked the ranchería and in one hour, 55 Indians were killed and 149 made prisoner. None of the attacking force was killed (Parrilla, 10/7/1759; 11/18/1759). Parrilla did not mention the tribal affiliation of these Indians, but their identity is revealed in other documents (Newcomb and Field, 1967: 262-263).

After the prisoners were confronted with a report of the army's scouts that a Taovaya and Iscani town lay ahead, one of them offered to guide the army to it on a good, short road. The prisoner did his job well, leading the army straight to the vicinity, and on October 9 the vanguard of Parrilla's army was attacked by 60 to 70 Indians. The enemy force retreated along a well-tended road which led through a forest, the Spaniards in hot pursuit. Suddenly Parrilla's forces emerged on the shore of a river, across from which stood a palisaded village. It was a Taovaya village on the northern bank of the Red River in what is now Oklahoma, opposite the vicinity of Spanish Fort, in Montague County, Texas (see Duffield, 1965; Newcomb and Field, 1967: 261-262, and Bell and Bastian, 1967, 54ff. and Fig. 26). The Spaniards came under heavy musket fire from the fort and from the many

Indians outside it. The army had fallen into a trap, taken in by an ancient strategic ruse. Parrilla was to pay dearly for his rashness. In the ensuing battle the Indians attempted to surround the Spanish army and annihilate it, while the Spaniards defended themselves as best they could, also trying to cross the river and get at the palisaded village. The Taovayas were aided by their kinsmen and confederates, the Iscanis, who occupied a village a short distance downstream. The Spaniards also could see the tipis of the Comanches beyond the Taovayas' corrals, and Parrilla believed that there were Frenchmen with the Wichitas, giving them assistance. But the presence of Frenchmen is to be seriously doubted, as is any significant tactical help on their part (Newcomb, n.d.; Newcomb and Field, 1967: 261-264). The Spaniards estimated the enemy force to be between 2,000 and 6,000 men, possibly 500 of whom were mounted. The battle raged from shortly after noon until darkness. But even use of the two cannons the Spaniards had brought along and the death of a courageous enemy chief could not win the day. Parrilla was forced to retreat. The retreat turned into a rout as his poorly trained and demoralized men fled back through the tangled brush and forest to their temporary camp, leaving behind their cannon. With nightfall the Indians withdrew to their palisaded village to celebrate while Parrilla and his officers met in hurried consultation to assess their predicament. The decision was not long in the making; Parrilla ordered his shaken army to break camp in the darkness and commence the return march to San Sabá. More than fifty men were dead, wounded, or missing; the Apaches were on the verge of deserting, many horses were dead or missing, and scouts reported that new contingents of Indians were joining the enemy in their village.

In a tactical sense the battle was almost a standoff in that neither side won a clear-cut victory. But in broader perspective it was a decisive Spanish defeat as it marked the end of Spanish expansion and domination in Texas. With the exception of the Tonkawas, the Spaniards had been unable to punish the Indians responsible for the destruction of the mission, and Indians equipped with firearms and riding horses were increasingly to force the Spaniards onto the defensive and into retreat.

The Lipans acquitted themselves well

throughout Parrilla's campaign, serving mostly in a scouting capacity, though in the battle on the Red River they were stationed on the army's left flank with some of the Spaniards and seem to have performed as ably as they. But since they were unable to steal any horses or acquire captives, they were eager to leave the scene of the battle. In fact, Parrilla claimed that some of the Lipans retreated "impetuously" taking not only their own horses but some of the Spaniards' too. But he also stated that the Lipans served "loyally and affectionately" in the campaign. In one place Parrilla mentioned that one Lipan was wounded and one killed, but in another that they suffered no casualties. Whichever the case, the Lipans considered the campaign a success, and hurried back to their families to celebrate the victory. The families of the Lipan warriors had sought refuge during the campaign with the "Nattagees, Mescaleros, and Faraones" (Parrilla, 11/18/1759), so that the returning warriors did not remain at San Sabá, if in fact they passed through there on the return journey. Parrilla noted that while the Lipans were with these other Apaches it had the beneficial effect of halting their raids on Spanish settlements. He also believed that the Lipans would return to San Sabá.

. . . once they have celebrated according to their usage and custom their happiness that all 134 of them who participated in the skirmishes are alive. [We must allow] also for the distance of their habitat on one hand and of their need for establishing their quarters wherever food is available. So that this is in their favor now, and we cannot think badly of them nor consider them false or deceitful in the offer they made to reside at the missions once they observed one of our campaigns against their enemies (Parrilla, 11/18/1759).

While the Lipans could celebrate the outcome of their part in the Parrilla campaign, they also were fully aware of their precarious situation. They had been wary of the Spaniard's ability to defend them after the San Sabá Mission was destroyed, and the recent battle of the Red River demonstrated that the power of the Wichitas and Comanches—or the weakness of the Spaniards—was perilously real.

Parrilla was soon relieved of his command and replaced by Captain Felipe de Rábago y Terán, and it must have seemed to the Lipans that both the ability and interest of the Spaniards

in protecting them were in grave doubt. But the new commander of the Presidio of San Luis de las Amarillas quickly rebuilt and strengthened the fort, brought its garrison up to full strength, and saw to it that his soldiers were well mounted. By November 1761, Rábago reported that the stockade was almost finished.

Surely in its strength (it is made of stone) it looks like a castle. Since the stockade dominates the view for the entire fortress one should be able to defend oneself very easily from it. It seems that its view has encouraged some of the Apache chiefs to live on this river in spite of the fear they always have for the other Indians, their enemies. The stockade has also caused contrary effects in their enemies. Two numerous squadrons [war parties] arrived in these environs and later retreated without doing any harm at all (Rábago, 11/6/1761).

These were encouraging signs from the Lipan point of view, and the new commander also was friendly and distributed presents quite freely.

I treated the captains and the rest of the people of this nation affectionately and entertained them royally. In addition I have spent large sums of money from my own pocket for goods that I have distributed to them. I have given them tobacco, corn (*maíz*), *piloncillo* [loaves of brown sugar], bridles, spurs, iron material for saddles, and complete clothing for some. With such gifts I managed to have several conferences with the captains. I reminded them that they would be better off (temporally or spiritually) if they established themselves in the village or mission. I pleaded with them until I convinced them (with temporal arguments). I pointed out that it was reasonable to come, especially since they have lost most of their lands to the Comanches and other nations. By taking possession of their lands the enemy has also taken their bison.

Bison is the daily food of the Apaches. They were deprived of it because they were afraid of their enemy. They asked me to help them by giving them some soldiers so they could hunt bison. I have given them men on five occasions. I helped them to make them feel obligated, to make the commanding official with them realize the extent of the land and recognize the advantages and disadvantages of this land (Rábago, 12/31/1761).

Rábago's motives for so ardently courting the Lipans may at first glance seem strange, but certainly not as vague or peculiar as some would have you believe (Castaneda, 1939: 154). Rábago was well aware of the strengths and weaknesses of the Lipans, Mescaleros, Tonkawas,

Wichitas, and Comanches. But he was a victim of circumstance as much as were the Lipans. There was, he knew, little possibility of coming to satisfactory terms with the Wichitas or Comanches and none at all that they could be induced to enter missions. Yet, if his regime was to follow instructions, a successful mission or missions had to be re-established. And perhaps uppermost in his mind was the need to defend the presidio from the powerful northern tribes. Admittedly, the Lipans might not be ideal allies but they had at least acquitted themselves well at the Red River battle. While they could hardly be called friends, they were not hostile either. But if they were to become enemies, whether or not they joined forces with the Comanches or other Indians, the chances that the presidio could long survive were poor. Rábago, it would seem, had very little choice; he needed support from some quarter, the Lipans were the only natives who could give it, and after all, such an alliance was only the continuation of a policy established by his predecessor.

By August, 1761, Rábago (8/18/1761) had become confident that the Lipans could be congregated in missions and so wrote the viceroy and Father Jiménez at San Juan Bautista. Several chiefs had visited Rábago and promised to live in a mission with their people after they had secured meat on a last bison-hunting excursion. Rábago provided an armed escort for the hunters. In his letter to the viceroy, Rábago suggested that it would help to persuade the Lipans to honor their promise if the commanders at the other posts where the Lipans were apt to visit—Béjar, San Juan Bautista, and Santa Rosa del Sacramento—were instructed to turn them away. In October, El Gran Cabezón (Big Head), an important and powerful band chief, promised Rábago that he would bring in his people to settle at a mission. Rábago quickly relayed this information to Father Jiménez, and Jiménez arrived at San Sabá early in November.

On November 3, a meeting was held with a Lipan chief, who stated that 10 other chiefs and their people wanted to take up mission life (Jiménez, 11/4/1761). Shortly afterward, Gran Cabezón and the other chiefs again visited the presidio to confer with Rábago and Jiménez. The Lipan captains agreed to recognize Gran Cabezón as their spokesman and paramount chief, but subsequent events suggest that his position

was not long recognized. Gran Cabezón was now ready to settle his band in a mission, but he could not be induced to settle at San Sabá. The destruction of the mission, the death of its priests, the murder of presidial soldiers, the nearness of the Comanches, Wichitas, and other enemies, and their continual theft of horses from the presidio and probably from the Lipans too, weighed too heavily on his mind. But the chief was willing to discuss settling on the "San Joseph River"—the upper Nueces, halfway between San Sabá and the Rio Grande. Rábago himself was familiar with the upper Nueces region, having crossed it while cutting directly north from San Juan Bautista to San Sabá (Fig. 76). It was rugged, isolated country and it had not yet been penetrated by the Comanches, Wichitas, or their allies.

But in order to persuade the Lipans even to settle in their own upper Nueces River country, Rábago had to agree to two other conditions. First, Gran Cabezón asked that more soldiers than had been detailed ever before be provided for a large bison hunt. Father Jiménez agreed with Rábago that to do this would be beneficial, since the Apaches would enter mission life with a food supply and would not have to be fed immediately. Gran Cabezón's second demand was that the daughter of "Captain Grande Natagé," a captive held by the Spaniards somewhere in Nuevo Leon, be returned to her people. Rábago readily offered to do everything possible to find her, saying:

The Natagé captain, a relative of Captain Cabezón, has promised to restrain the Apache Indians known as Mescaleros from stealing horses and killing in the province of Coahuila if his daughter is returned. Should the Mescaleros continue to steal and to kill, the Natagé captain will take the horses from them and present them to me so that I may return them to the owners. In addition he will take all their horses, women, and children (Rábago, 12/31/1761).

Whether Gran Cabezón was literally a relative of the captive may be questioned, but in any case the close tie between this Lipan and a Mescalero division at this point in time is of note.

Rábago was able to persuade Gran Cabezón and his people not to insist on their third demand, that soldiers accompany them on their expeditions against the Comanches during the prickly pear season. Rábago seems to have felt

that the presidio at San Sabá was strong enough to hold out against Comanche attack, and that the new location on the upper Nueces would be a safe one, but he was not willing to initiate a campaign which might well be as disastrous as Parrilla's recent one.

Following this productive conference, Father Jiménez hurried back to Mission San Bernardo on the Rio Grande in order to secure supplies and make the necessary arrangements for the new mission. Normally new missions were approved by viceregal officials and by the College of Querétaro before they were established. Although Rábago had been urged to re-establish a mission at San Sabá, the new site on the upper Nueces could hardly qualify in this respect. It was too far away. But waiting months, perhaps years for official approval was clearly an impossibility. The Lipans had never before been as willing to enter into mission life and quite probably never would be again, particularly as they might be decimated by their enemies, scattered to the four winds, or be forced to join their less friendly relatives. Father Jiménez also

thought the site on the upper Nueces a good one, and until official approval and assistance were obtained, the missions on the Rio Grande could lend the new one corn, beans, tobacco, and some meat. Jiménez also pointed out to his superiors that it was important to be able to supply the material wants of the Lipans, since they would not put up with leftovers or skimpy provisions (Jiménez, 11/23/1761).

Rábago and Father Jiménez seem to have had high hopes for the proposed mission; if they had serious doubts about the outcome of this venture, they are not communicated in their letters and reports. The Lipans, for their part, seem to have been much more tentative and unsure about what they were getting into. Yet they had already profited materially from their new association, their demands were being met for the most part, and if things went poorly in the new mission they could always desert and disappear into the wilderness. Thus was the stage set for the founding of Mission San Lorenzo de la Santa Cruz.

Life and Death of the Mission

Gran Cabezón and his band returned to San Sabá from the fall hunt in the last days of December, 1761. They were ready to begin mission life and demanded that Rábago "get busy" and proceed to the upper Nueces. Rábago hastily dispatched a letter to Father Jiménez on the thirty-first, requesting him to come to the upper Nueces, and also ordered a detachment of 30 soldiers and a lieutenant to accompany the Indians on their journey. The detachment, including Rábago, departed from San Sabá on January 3, 1761 (Rábago, 12/31/1761; 1/2/1762). The journey of 100 miles was completed in seven days, the party making camp near the spring at El Cañon on the morning of the ninth. Rábago, who had gone ahead to examine this spot, "found it very suitable for the establishment of the town" (1/9/1762).

Rábago ordered the soldiers to explore the valley and hurriedly sent a message to Father Jiménez at San Juan Bautista informing him of his arrival. Losing no time, Father Jiménez, hauling many supplies and accompanied by Father Joaquín Baños, reached El Cañon on January 16. Father Baños originally had been assigned to Mission Santa Cruz de San Sabá, but had become discouraged and returned to Mexico before it was destroyed. They brought with them axes, iron bars which could be turned into various kinds of implements, hoes, and yokes they had made for oxen. They also brought a supply of corn, tobacco, *piloncillo*, clothing, and hats for the Indian captains. Some Indians from Mission San Bernardo were brought along to build an irrigation ditch so that corn might be planted in the spring (Rábago, 1/16/1762).

By the twentieth of the month exploration of the valley had been completed and Rábago ordered his men to make depositions concerning the nature of the valley and adjacent lands, and he requested that the priests do the same. Though the men were obviously under pressure from Rábago to report favorably on this wilderness,

there is remarkably little distortion or hyperbole in the depositions. Lieutenant Manuel Váldez (also appearing in the documents as Manuel Baldes and Joseph Manuel Váldez), who appears to have achieved his rank as a result of Rábago's having had an adulterous affair with his wife, was in charge of the survey (Castañeda, 1939: 150). Váldez was 37 years old and despite his illiteracy and the peculiar relationship he had with his commander, seems to have been an able and reliable soldier. He was particularly concerned with water resources of the valley and how they might be employed. He said:

The river flowing from north to south through the middle of this valley is abundant in soft water. The river has three possible irrigation sites because the river bed is so wide and because part of the water goes under the area where there are no sharp boulders or rock bottom. The problem can be solved by digging the foundations where the dams are to be built until the rock bottom is found. One of the irrigation sites, about one-eighth of a league away in an easterly direction, allows all of the water to be extracted from the river. The water is enough to irrigate about four leagues of land. Three villages or towns could be established beyond the irrigation ditch. Water can also be taken from the western side; the land is also level (Rábago, 1/20/1762).

Thirty year-old Sergeant Pedro de Rivera echoed his lieutenant, Rábago's deposition quoting him as saying,

... it is one of the best valleys he has seen, considering the length and width as well as the canyons which surround it on all four sides . . . The abundance of grass proves the land is fertile and that cattle can easily live and reproduce in this area.

Francisco Longorio, a 40 year-old soldier from the presidio on the Rio Grande, and Thadeo Flores, a 49 year-old soldier, were impressed by the large amount of wood available. Fathers Jiménez and Baños made a deposition on January 22, and in addition to the claims made about

the abundance of water and the ease of irrigation, they pointed out the geographical advantages of the site. They believed the land between the Rio Grande and San Antonio was useless and thus impossible to colonize, but that the region between the new mission site and the San Sabá River could be settled. They said,

Many villages or settled areas could be established in these directions and utilize the mineral wealth which is said to be so abundant in the territory. The fields are extensive and easily irrigated from the river. There are many types of wood in this area, for example, cedar [*Juniperus ashei*], British oak [*Quercus shumardii* and/or *Q. texana*], cottonwood, walnut [probably pecan, but possibly Texas black walnut, *Juglans microcarpa*], evergreen oak [i.e., liveoak], mesquite, and many others for all types of construction (Jiménez and Baños, 1/22/1762).

With these preliminaries out of the way, Rábago was ready to formally establish the mission, and on January 23, 1762, the two priests, Lieutenant Váldez, other soldiers, Joseph Antonio, a longtime Lipan captive who spoke "perfect" Castilian and served as an interpreter (Rábago, 1/23/1762a), the leading Indians, and Rábago went together to the flat knoll above the spring where the mission was to be built. A hut with a cross in front of it had been erected to serve as a church, and the fathers standing at its front door rang a bell summoning the Indians. A crowd of 300 men, women, and children of Gran Cabezón's band gathered, as well as a number of other Indians who were undecided about mission life. Father Jiménez, barefoot and dressed in alb and stole, blessed the site. Rising from prayer, he held the cross up and handed it to Rábago, and in a solemn procession the soldier bore it to the altar which had been prepared for the holy celebration of the mass.

Following the mass and a hymn sung by the fathers, soldiers, and the few mission Indians, Captain Rábago through Joseph Antonio described to the Lipans the spiritual and material blessings they were to receive from the Spaniards. Chief Gran Cabezón responded that the Indians were pleased with everything, and wanted the Catholic king to protect, defend, and govern them and their children. He also asked that they be given possession of the site and the spring.

Rábago, who had a feeling for the dramatic, later recounted:

Leading Captain Cabezón in his majesty's name (may God keep him), I took him across the lands and spring of the site. He uprooted some grass, drew water, and watered the stones he had picked up. By means of the interpreter we learned it was symbolic of possession. He spoke for all his people saying that they were in full agreement with him. He asked me for the land he needed as pasture for his horses. I granted his request in accordance with his majesty's orders in his royal laws. Comprised in these lands are those to be used for agricultural purposes. I named this village Santa Cruz (Rábago, 1/23/1762b).

Rábago appointed Gran Cabezón captain of Santa Cruz, but he did not appoint any other officials, postponing it, he said, "until they are better instructed" (*ibid.*). Father Jiménez named the mission San Lorenzo, and the birth of San Lorenzo de la Santa Cruz was accomplished.

A few days later, while Rábago was still at the new mission, Father Jiménez presented him with a rambling petition which throws considerable light on the problems which now confronted the missionaries, as well as some pertinent facts about Lipans. Uppermost in his mind was the need for an adequate number of soldiers, not only for defense of the mission from attacks of the Comanches and other Indian enemies, but also to impress the Lipans, whose constancy the father doubted. Only Rábago could supply this force, and Jiménez urged him to do so even though he recognized the dangers Rábago would face should he split his forces. For his part, Jiménez was willing that his missions on the Rio Grande lend supplies to the new mission until it was officially recognized.

Most of the missionary's doubts sprang from the nature and character of the Lipans, who were so different from the acculturated Coahuiltecos of the Rio Grande missions. He had found the Coahuiltecos to have a "limited capacity" and to be cowardly. Their land was poor and provided them with a meager and precarious existence. When brought into missions they were easily and cheaply satisfied with a little corn, tobacco, and a goat on special occasions. In contrast, the Lipans were "proud," possessed a "wide-awake understanding," "courage," and a "haughty spirit." They were accustomed to living well on bison and other game animals, possessed large herds of horses, and were well supplied with bridles and saddles. They raised some

of their own corn, as well as melons and squash, and had excellent tobacco. The Lipans had obtained brass utensils, clothing, and some firearms from Europeans, and in general were well off. There were always some "sorcerers" among the Lipans, Jiménez added, probably meaning shamans, who were antagonistic to the priests and capable of causing all sorts of trouble. Jiménez also realized that he and the other Spaniards saw things from a very different perspective than did the Lipans, remarking:

We must move cautiously in dealing with the Indians regardless of how convincing previous incidents have been. According to what I know about them our opinions are quite different. What seems inconsistent to us is not inconsistent to them regardless of the insufficient reasons they express (Jiménez, 1/26/1762).

It would be expensive and ticklish to keep these Indians satisfied and in the missions, at least at first. But, the priest observed, for years the government had spent vast sums of money attempting to contain these raiders; it would be wise now to spend such money for peaceful purposes. His task was to be a difficult one.

In addition to the more than 300 people of Gran Cabezón's band, other Lipans came and went in a constant stream, curious about this new Spanish settlement. Jiménez believed "that once this mission is successful (which will occur if the superior government provides the necessary supplies) all the remaining heathen Indians will be converted" (Jiménez, 2/5/1762). And at first it seemed likely that many other bands would come in to be settled. Captain Teja [Texa] had promised to settle his band in a mission, but he was sick and encamped on the Chanes [Llano] River at the time San Lorenzo was founded. Sergeant Pedro de Rivera was, in fact, sent from the new mission to the Llano River to help him recover (Rábago, 1/21/1762). The chief did so, since he was at San Lorenzo the following summer. Teja was probably the chief later referred to by the missionaries as the "captain, given his health by our merciful Lord with the holy baptism [who] comes and goes almost as if he were a mission Indian" (Jiménez and Cuevas, 2/25/1763). Another band chief, Captain Panocha, promised to "establish himself in a mission within a year at most" (Rábago, 2/6/1762), and finally, a chief known as El Turnio, or "The

Squint-eyed," wanted a mission established for his band. Using grains of corn, he counted out for Rábago 114 armed men under his command, but he could not enumerate the women and children exactly "since he did not have the ability required" (Rábago, 2/7/1762). His band must have numbered between 400 and 500 people, perhaps more. Turnio wanted to settle at a spring Lieutenant Váldez had visited while surveying the upper Nueces Valley. The lieutenant said of this location:

The other spring is at quite a distance from this area [San Lorenzo]. It is about four leagues walking downstream on the other bank, or in other words on the western bank of the river. The spring originates at the height of a plain with a large forest of walnut [pecan] trees (Rábago, 1/20/1762).

At first, Rábago refused to establish this mission because he could spare no soldiers to guard it and there were no missionaries available to serve in it (Rábago, 2/6/1762). But Turnio was insistent and Rábago fearful that the Indian "might become cold in his allegiance and prejudice the other Indians against us" (Rábago, 2/7/1762). On February 6, 1762, this second mission was established. Father Jiménez and Lieutenant Váldez, Pedro Sanchez, Joseph de la Garza, Nicolas de Mendoza, and Margil Falcon, all soldiers; other Spaniards, Joseph Antonio the interpreter, and Turnio with some of his men, gathered at the spring.

By means of the interpreter, Joseph Antonio, we asked El Turnio if he liked the land. After saying yes, he asked if I liked it. I said yes, and the Captain said he was glad. In addition, he expressed his desire to live there and to always support his family who occupied ten tents. After saying he had many people under his command, he added that they would leave the mission whenever fruits [prickly pear tunas] and *cogallitos* [probably agaves] were in season. He felt that once the corn began to grow many more people would come to the village. I shook his hand and as your excellency's representative I gave him royal and personal possession of the spring and the lands designated by your excellency for the development of conversion settlements. I showed him where the village, church, square, and royal houses were to be founded. I called the village Nuestra Señora de la Candelaria. We had a cross made to mark the exact location. To encourage him I appointed him governor of the village. Later I explained the power and obligation he would

have as governor. His reply was that as soon as his brother, whom he feels is greater than he, saw him settled in the mission he would also [settle] (Rábago, 2/8/1762).

Rábago promised Turnio ten soldiers for Candelaria, a number the Indian considered insufficient. Actually, Rábago (2/6/1762) also felt more soldiers were needed, since he stated in a letter to the viceroy that he needed at least 30 soldiers for the two missions, and he suggested that they be transferred from Coahuila where they were no longer required. Rábago did not manage to get the soldiers transferred; instead he had to detach 30 of his badly needed men from the San Sabá Presidio for duty at the missions.

Information about the San Lorenzo Mission in the early months of its existence is scarce, partly because of the weather. When San Lorenzo was established the weather seems to have been pleasant, but soon afterward a blizzard struck and it was not until February 5 that Father Jiménez could write his superior, Fray Manuel Nájera, that it had snowed and "froze considerably." He said that living in a small army tent was inconvenient and the cold made it almost impossible to write. The weather must have ameliorated in the next few days for the Candelaria Mission was founded and the volume of correspondence also increased.

On February 7, Fathers Jiménez, Baños, and García collaborated on a lengthy report concerning the state of the missions of the northern Rio Grande. Most of the report is concerned with the missions of San Juan Bautista and San Bernardo and their Coahuiltecan Indians, but a portion of it is devoted to the new missions on the upper Nueces. Among other things, the fathers reported that five persons had been baptized in them and that there were more than 400 Indians in each mission. The exact number was unknown "because of many other Indians, their relatives, and allies among them" who came and went (Jiménez, Baños, and García, 2/7/1762).

Work on the mission buildings was soon begun and a field prepared for planting. Presumably preparation of the field included the digging of an irrigation ditch. In the spring six and a half *fanegas* of corn (about 12 bushels) was planted. Jiménez said (10/8/1762):

I had hoped to save on the expense of transporting

maíz from the mission on the Rio Grande because the six and a half *fanegas* of corn which we planted were coming along nicely. But we have had so many Indians come in, that like locusts, they have cleaned out the field. Since we do not have many soldiers, we have no strength to hold them back even with our [Indian] chiefs' assistance.

In March 1762, the Comanches destroyed a Lipan ranchería in one of the canyons near San Lorenzo; in May the Comanches attacked another camp killing 40 persons, and in July another raid resulted in the death of 14 more Lipans (Jiménez, 10/8/1762). No attempt was made by the few Spanish soldiers to pursue or punish the raiders. They learned of the attacks well after they occurred, and in any case were too few to take any significant action. So far, at least, the Comanches and their allies had stayed away from the missions.

In June, Father Jiménez gave permission to the Lipans to go on a bison hunt. The men departed, leaving the women and children at the mission. But while the men were hunting, a rumor was spread among them by "the evil one" that the missionaries had abandoned the missions, taking with them as captives the wives and children of the hunters. Some of the hunters quickly returned to the mission to discover that the rumor was untrue, and after the hunt was over they rejoined their families at San Lorenzo (Castañeda, 1935: 399). Father Jiménez and his new assistant, Father Manuel de Cuevas, had been asked by the viceroy for a report on the situation at the new missions, and in their reply, the Consulta of February 25, 1763, they apparently referred to this incident. They said that one of the band chiefs, El Lumen (The Light), who with permission was hunting bison in the direction of San Sabá, had had a dream. He dreamed that the missionaries and soldiers had left the missions, taking Lipan women, children, and horses with them. El Lumen hurried to San Lorenzo to discover whether or not his dream was true.

He found the families quiet and fond of the missions; the children diligent in the doctrine. Later he thought that his wife and his people's wives had been living with us, with the soldiers, and with the mission Indians of the Rio Grande [Coahuiltecan] who help us. He did not find this to be true; [but] he left and has not returned since then. He suggested to the other captains that we were gathering them in the mission to kill them deceitfully. The

killing was to occur before any more soldiers came. With this warning he made all the other captains restless and led them to that end. However, God managed to defend us. The captains told him to leave if he did not believe in our sincerity. He left and we do not expect him to return, God willing. There were other things besides the uneasiness which almost caused everything to be lost. He waited with his gun aimed to kill one of us without knowing why. On another occasion they surrounded the Spaniards' dwelling each with his arms. Another time he wanted the altar cloth to use as a breechcloth. Although we were unable to provide him with an equivalent, God was able to calm him down (Jiménez and Cuevas, 2/25/1763).

Later in the summer of 1762 Father Jiménez gave the chiefs permission to leave the mission in order to gather prickly pear tunas, and they all returned, faithful to their promise to do so (Jiménez, 10/8/1762). In the fall Father Jiménez again gave the chiefs—Gran Cabezón, Teja, Boruca (Chatterbox), and Bordado (or Zapato Bordado, Embroidered Shoe)—permission to leave the mission with their people to hunt bison, supplying these chiefs with written statements to this effect, so that if they encountered any Spaniards from San Sabá they would not be considered deserters or hostiles. Only one chief, El Cojo (the Lame or Pegleg) left the mission without first seeking permission from the missionary.

In all, eight "captains" or band chiefs (Gran Cabezón, El Turnio, Teja, Boruca, Panocha, Bordado, El Lumen, and El Cojo) were known to the Spaniards by the summer of 1762. By the time the Consulta of Jiménez and Cuevas was written, four more had been added for a total of twelve. The Consulta does not mention the chiefs' names; nonetheless, it is clear that the four bands which constituted the core of the mission-affiliated Lipans were those of Gran Cabezón and El Turnio, the "founding chiefs" (Jiménez, 10/8/1762), plus the bands of Teja and Boruca which briefly settled at the mission somewhat later. Two other bands promised to settle at the missions when more Spanish soldiers were present to defend them (perhaps Panocha's and Bordado's bands). Three other bands came and went, more or less at will, Cuevas and Jiménez saying of them: "We do not insist that they remain here since we do not have enough provisions or a competent number of soldiers for so many people." Two other bands, probably

Lumen's and Cojo's, had deserted the missions the previous summer and had not returned. A twelfth band, assuming it was not one of the unnamed bands listed in the Consulta, was that of Bigotes (Mustaches). A sister of this chief, along with some other women, was captured in an attack made by "Texas" (i.e., Hasinai Caddo) Indians and their allies on a ranchería on the Frio River near San Antonio, in September, 1762. The chief's sister escaped the following spring and sought refuge in the San Sabá Presidio, where Rábago (4/4/1763) had her questioned. Bigotes was one of the three chiefs who had temporarily settled in 1754 at the mission Father Terreros established in Coahuila (Dunn, 1912: 199). The experience appears to have soured him permanently on missions, as he was never mentioned in connection with either of those on the upper Nueces. In 1763 his band was camped at Paint Rock, about thirty miles east of San Angelo (Castañeda, 1938: 358; 1939: 187–190).

In addition to these twelve Lipan bands of Central Texas in the 1760's, there were unquestionably smaller sub-band sized remnants that were unfriendly to the Spaniards. Rábago (10/15/1762) apparently was referring to them when he commented that some were

... killing a few cattle from the San Antonio River villages. They do no other damage and I know their captains try to prevent them. An example is that they have moved closer to the missions and away from such villages.

He felt that if these few Lipans were dealt with sternly, they could move to the upper Nueces, come under the influence of the missions, and "this would easily lead to conversion." He also stated that once the Lipans had been converted, the Mescalero and Natagé Apaches would follow their lead since "these nations are closely tied to the Lipans" (Rábago, 10/15/1762). In the Consulta of Jiménez and Cuevas (2/25/1763), a similar statement was made, the missionaries claiming that the "Natajes," "Pelones," and "Mescaleros" would be easily converted following the conversion of the Lipans, since these Apaches "are either relatives, very good friends, or have the same language."

Father Jiménez entertained no illusions about his control over the Lipans, realizing that if he had refused their requests to leave the missions

to hunt or forage "they would have gone anyway" (Jiménez, 10/8/1762). In the fall of 1762, the Lipans had also heard a rumor that another Comanche-Wichita attack was imminent, and since there were too few soldiers in the missions for defense, there was no possibility of restraining them. Father Jiménez half-heartedly tried to persuade them that they ought to remain since the Comanches had told the Spaniards in San Antonio that they would not attack Lipans in missions. But the Lipans could not be made to believe this tale and Father Jiménez (10/8/1762) admitted that "neither do I, considering the Comanches' endless hatred for our Indians, their great strength, and our Indians' cowardice engendered by their great fear of the Comanches." It turned out that the rumor was well founded, for shortly after the Indians left on their hunt some Lipans came to the mission to report that the Comanches had attacked a ranchería, killing some people and stealing horses. Jiménez was unable to discover which band of Lipans had been attacked.

The shortage of food with which to feed the Indians both lessened the possibility of controlling the Indians and made the requests of the chiefs to leave the missions to hunt and forage almost a blessing. The situation was serious, even as early as 1762. The missions on the Rio Grande had sent many supplies, but they could not continue to do so indefinitely.

... since it takes so long to get provisions from the superior government, I feel it is impossible to continue supporting so many people. Your excellency must realize that it is necessary to give the essentials not only to those in the missions but also to the many others who are frequently here because they either are relatives or very good friends of the mission Indians. They promise to congregate whenever there is plenty to eat (Jiménez, 10/8/1762).

As if Father Jiménez' problems were not bad enough, he learned in the fall of 1762 that "the governor and other officials of Coahuila and Texas had recently made a formal complaint against the Apaches" (Castañeda, 1939: 170). Jiménez (10/8/1762) implored Rábago to inform the viceroy that the Apaches who were raiding in Coahuila and Texas were not his mission Apaches. Rábago, at San Sabá, forwarded the missionary's letter and added to it his own plea that the various Apache divisions be distinguished from one another. He pointed out that

the Apaches themselves recognized three divisions—the Mescaleros, the Natagés, and the Lipans (Rábago, 10/15/1762). And in 1763 the missionaries (Jiménez, *et al.*, 9/19/1763) noted that the Mescaleros and Lipans were:

... very different from each other. They live and support themselves differently. Although we suspect some from those nations [Mescaleros], their followers, and others comprised under the name Apache have intermarried with some Lipanes (a custom no longer practiced), it is true that each has preserved some trading. This has been decreasing since the Lipanes have strengthened their friendship with the Spaniards. Since the founding of the Lipane missions it is true that the Apaches (as they are known to the Lipanes) or Mescaleros (as they are known to us) have on various occasions stolen six horses from the Lipanes. In addition, it is true that they have begged the Lipanes twice to unite with them and resist our arms as one force. This was attempted through the Lipane captains. The attempt to convince the Lipanes who had dealings with them (the Mescaleros) to unite was a failure. It led to a stronger union among themselves. Others joined the Lipanes, for example, the captain known as Cabellos Largos who belonged to the people of Captain Voruca, and other individuals who preferred not to recognize any captain and to go on alone.

Jiménez and Cuevas (2/25/1763) succinctly summed up the situation they found themselves in by pointing out that the Lipans had horses, firearms, and were in their own land and that:

We are very few and without any help nearby. The Indians are very bold; if they are not punished they misbehave more. They are brought up in Christianity on their own terms. To restrain them in the conditions described we feel it is indispensable to have a sufficient number of soldiers.

Despite the many and increasing problems, work on the mission buildings had gone well and by October 1762, Father Jiménez (10/8/1762) could report that the church (Fig. 3, Structure 2), the sacristy (Fig. 4, Structure 5), and quarters for the priests (Fig. 4, probably Structure 9) had been completed. They were built of adobe and "stoutly erected." A storehouse for corn and other provisions had been started (Fig. 4, Structure 10) and Father Jiménez expected it to be completed before the month was out. But in his letter to the commissary general on the twenty-eighth of the month, this building was not men-

tioned, so he may have been over-optimistic (Castañeda, 1935: 403). The Indians took a fancy to the storehouse, Jiménez writing that they "have become excited with it telling me they will hide in it should their enemies come. They have asked me to build their houses similarly and I have promised to do so" (Jiménez, 10/8/1762).

Another encouraging sign, the missionaries claimed, was that by early 1763 the Lipans were much more willing to listen to the missionaries.

[They] now listen to the divine word with pleasure. They ask us questions which manifest some of the errors responsible for their disliking of Christianity and of peace with other people. They have helped us with some of the work. They are persuaded and gladly agree to support themselves with their work and remain in the missions like the other converts. They bring us their children for baptism and call us to baptize adults when they are sick. They have not left the mission without our permission. When they have had our permission to leave the missions, they have left their dishes, a few horses, their children, and their wives for us to keep. Things such as these and other similar ones convince us that the Indians are in a frame of mind for conversion (Jiménez and Cuevas, 2/25/1763).

In December 1764, Jiménez again said much the same thing:

For the past three years two missionaries have lived in San Lorenzo and Candelaria; they work with the Indians domestically. Many of the new mission Indians who were against Christian doctrine would leave as we began to explain it. Now they listen with pleasure. Baptism was hated in the beginning, today some bring their children to be baptized. Others ask to be baptized especially after telling us of their sick ones. God is responsible for this change. Miracles such as a quick recovery from an illness after receiving baptism have proven the enemy wrong. The enemy believes that everyone who was baptized would die (Jiménez, 12/26/1764).

In 1764 an apparently devastating smallpox epidemic struck the Lipans. Jiménez (12/25/1764) said, "During the smallpox epidemic we baptized (in *artículo mortis*) forty children and twenty-seven adults in San Lorenzo, and two adults and five children in Candelaria. The majority died." More revealing of the situation is the statement of a perturbed and mystified Father Jiménez that the Indians were "seeing" an old man, whose activities and message were

those of a prophet or messiah. The missionary said:

All the Indians state that they see an old man come and disappear. The old man advises them to have a continuous war with the neighboring nations and with the Spaniards. He emphasizes that they should never be baptized. Those that are will die shortly after the ceremony. He appears in battle, where he is killed. Later he reappears. The old man uses this episode to encourage others to fight, promising that they will also live after death. After death they are to live among their people reunited; they are to reunite with the separated. He changes forms to convince the skeptical. He often appears in the form of a woman. The oldest Indian who has seen her says she is always the same age. Sorcerers [i.e., shamans] advocate that the old man be trusted (Jiménez, 12/26/1764).

Nativistic movements are a common response to cultural upheaval and social disorganization, and are a well known phenomenon among North American Indians, as well as among other peoples. The occurrence of such a movement among the Lipans in the 1760's indicates that disintegration and disorganization of their culture had assumed major proportions.

Through the course of more than a century, direct contact with the indirect influence from European civilization had wrought revolutionary changes in Lipan culture. And in a contest which had raged for at least sixty years, the Lipans had been forced from their homeland by Comanche, Wichita, and other Indian enemies, and were still under attack from them. Heir to the awful legacy of European diseases, their numbers were also drastically declining. Many Lipans had believed that the way out of their predicament lay in alliance with the Spaniards, though they could hardly have realized that such alliance would include a challenge and assault by the missionaries on their ancient faith, indeed upon their entire way of life. But the Spanish alliance had not proved to be a solution. The soldiers were too few, incompetent, and ill-equipped to help the Lipans in their terrible military struggles; the missionaries were too poor to feed them regularly and too demanding of their labor and allegiance. In short, the Lipans found themselves in an intolerable situation for which there was no practical solution. But the prophet, with his supernatural gifts, offered a way—a plan of action and a road to salvation. To what extent

the Lipans embraced his creed is unknown, but that he appeared at all is symptomatic of their condition.

The inability of Rábago and the missionaries to obtain formal approval and support for the mission on the Nueces, combined with the growing reluctance of the Lipans to settle at the missions, must have made their future seem bleak by the end of 1764. Unfortunately, little information is available concerning the progress being made with the building at San Lorenzo during 1764 and 1765. Nor is much known about Candelaria, save that by 1766 an adobe friary and chapel had been built, as well as a mud-plastered jacal which served as a granary and warehouse. There also were temporary huts for the neophytes, and fields had been cleared in the vicinity but they were poorly cultivated (Castañeda, 1939: 179).

In October of 1766, the unhappy plight of San Lorenzo was worsened by an enemy attack. Comanches and their allies had raided nearby Lipan rancherías almost from the time the missions were established, as has been mentioned, but they had never before dared to attack the missions themselves. On this occasion, the thirty soldiers Rábago had assigned to the missions were all at San Lorenzo, perhaps there because Turnio's band had abandoned Candelaria early in the fall. Turnio's departure may, in fact, mark the abandonment of Candelaria; no further reference to Lipans living there has come to light. Perhaps the attack would have been successful despite the presence of all the soldiers had not a man who was out collecting wood early in the morning discovered the enemy. He dashed back inside the mission walls giving the alarm and providing enough time for the Spaniards and the few Lipans who were there to brace themselves for the onslaught. There appeared to be about 300 of the enemy, most of whom were on horseback and armed with firearms, lances, and hatchets. Those who were on foot were armed with bows and arrows. Their first headlong charge almost reached the mission walls, but the soldiers gamely returned the fire and the two swivel guns mounted on the bastion at the southwestern corner of the quadrangle were particularly effective in repulsing them (Fig. 4, Structure 7). The attackers retreated from the area covered by the swivel guns, probably the western and southern sides of the quadrangle, so the sol-

diers moved one of the guns to another location, probably the granary at the opposite corner of the compound (Fig. 4, Structure 10). But since there was no parapet on this building to give protection to the men serving this gun, and a withering fusillade was directed at it, it could not be used effectively.

Following their unsuccessful charge, the attackers took cover behind rocks, trees, and along the banks of the little stream leading from the spring to the Nueces. Sporadic fire was kept up by both sides until noon when it started to rain. The wet and undoubtedly discouraged assailants withdrew, taking with them a herd of mares; they did not discover the pasture in which the garrison's horses were kept. They apparently lost several warriors in the first charge, but removed their dead and/or wounded from the field so that the Spaniards could not learn precisely how many had been killed. None of the defenders in the mission was killed although Lieutenant Manuel Valdez, who was in command, suffered a shattered right hand, one soldier received a head wound, and several others sustained minor wounds (Arricivita, 1792: 391-392; Castañeda, 1939: 182-183).

In November 1766, only a month after the first attack, a second attempt was made to take San Lorenzo. Profiting from the earlier experience, the Indian attackers attempted to ambush the soldiers outside the mission. But a wary guard spotted the warriors and fired his gun to give the alarm. Women from the mission were at the river, and a detail of soldiers was out bringing in horses, but the women rushed back to the mission safely and what men were at hand took up their positions at the walls. The cannons had been placed more effectively than during the first attack, perhaps meaning that a parapet had been built to protect the soldiers who manned the cannon mounted on the granary (Rábago, 11/20/1766). Still, the force was too small to hold the mission against a determined attack, so Lieutenant Valdez ordered the women into soldiers' overcoats and hats, and placed them with guns along the walls. The Indians soon began their attack, but seeing that the mission appeared to be stoutly defended by numerous soldiers, they fired but one volley, wheeled their ponies, and retreated to a grove of oaks a short distance away. Soon a chief galloped his horse from the grove and approached within pistol-shot range of

the mission. He circled it three times before casually and leisurely returning to the grove unharmed, though hundreds of shots had been fired at him. From the grove the attackers continued to fire on the mission and received counterfire from it, neither side causing any known damage. The attack was made in the morning and the attackers withdrew at nightfall. They were

... not the same ones who attacked the first time, but they are well informed and obviously have been schooled by the latter, for the enemies who have just attacked us held a meeting in the Presidio de los Adaes area last August together with the Texas [Caddo], Tahuacana [Tawakonis, a Wichita band], Tancahues [Tonkawas], Tahuyas [Taovayas, a Wichita band], Yiojuanes [Yojaunes, a Tonkawa band], and other allied nations. We have learned about this meeting through a soldier from the aforesaid Presidio de los Adaes, who discussed it at the Presidio of San Antonio de Bexar. The aforesaid Indians [supposedly] planned to destroy the New Mission in retaliation for the damages received by the Texas because so many of them died during the re-encounter with the [Spanish] troops at the Chanes [Llano] River Pass on January twenty-fourth of this year. This occurred when the Texas attacked the Lipanes congregated in the New Missions, killing some of them, and capturing others, and [in addition] carrying off the entire herd of horses, including those belonging to the Indians and the Spaniards from the Señor San Joseph [Mission] (Rábago, 11/20/1766).

It would seem, then, that the first attack was made by Texas (Tejas, i.e. Hasinai Caddo) Indians, rather than Comanches as has been assumed (Castañeda, 1939: 182-184), and that the second was made by their allies, who may have been other Caddos, Wichitas, Comanches, or others.

The raids on San Lorenzo in the fall of 1766 presaged increased attacks on San Sabá during the winter, and by spring the presidio was virtually under siege. In February, Joseph Antonio de Trujillo, the interpreter, was killed outside the presidio by enemy Indians.

... those examining the body said there were three blows on the left side of the chest. There was another on one of the knees which had penetrated to the other side. The flesh from both thighs was torn and the right hand was cut off. They carried [away] the hand, the flesh, and the hair (Rábago, 2/28/1767).

By March, in a plea for more help, Rábago wrote that "supplies are desperately needed. I do not have even the principal supplies which are corn, beans, chile, and other essentials, and all the cattle and sheep have been destroyed or appropriated by the Indians" (Rábago, 3/11/1767). Wichitas, Caddos, Tonkawas, and Comanches were all involved in the siege and "they have taken over the roads and can be seen everywhere; taunting us in order to accomplish their intention of killing anyone who might venture out" (Rábago, 11/20/1766).

On March 17, 1767, a detachment of twenty-three soldiers, with four scouts out ahead, was ambushed at the river crossing near the presidio while on a hay-cutting detail. Three soldiers were killed, and if the party had not been close and within view of the presidio, it is likely that it would have been wiped out. Two of the bodies could not be brought in until the attack was over, and one of these was scalped, the other stripped of flesh, beheaded, and the head scalped (Rábago, 3/18/1767). Rábago could ascertain only that the attackers were "of various tribes who had united to help the Tahuaias [Taovayas] and the Comanches," this information coming from Ignacio Leal, one of the soldiers who had "experience in identifying the different tribes."

The immediate consequences of this affair were that Rábago ordered all of the Spaniards at the presidio to remain within its walls and the horse herd was sent to Coahuila (Rábago, 4/20/1767). Presumably the soldiers and missionaries at San Lorenzo were also staying close to the mission walls and maintaining a close watch. The attacks on the mission had already destroyed whatever possibility remained for it to be effective in settling and converting the Lipans. No record has been left of the departure of various bands from the mission, but it is clear that by the summer of 1767 no Lipans remained at the mission or apparently even visited it. The Lipans had abandoned Central Texas and they were never again able to roam the area freely.

In April, learning that a supply train with a large herd of sheep, convoyed by fifty men, was approaching the presidio, Rábago sent a detachment of fifteen soldiers to meet it two days' journey from the presidio, warn it of the danger, and escort it to the fort. Knowing that there were only a few enemy spies or scouts in the vicinity at the time, Rábago believed it would take sev-

eral days for the Indians to gather their forces. His calculations proved to be correct. Neither the escort nor the supply train was bothered, and the convoy arrived safely at the presidio on April 18. The enemy appeared in force the next day, Easter Sunday, however, and the presidio was attacked the following day. The fire from the cannons on the bulwarks and from the soldiers' guns drove off the attackers, but the herd of sheep was captured. The next day the Indians attempted to lure the Spaniards from the presidio with the herd, trying to make it appear that they had abandoned it. But the Indians had been seen leading the sheep, and so the Spaniards did not fall into this trap (Rábago, 4/20/1767; 4/26/1767; Castañeda, 1939: 184-185 unaccountably gives a different version of this incident).

On April 22, one of the sentries of the beleaguered fortress saw three men on foot descending the hill across the river, to the south of the presidio. As they approached, the sentries recognized one of the men as Manuel Váldez and that the other two were also soldiers. Váldez, serving as a courier, had left San Sabá February 26 with dispatches for Mexico City and was returning to his post (Váldez, 2/26/1767; Rábago, 2/28/1767). Brought before the commander, the soldiers quickly revealed the extent to which the Comanches and other Indian enemies had invested Central Texas. The three soldiers had left San Lorenzo de la Santa Cruz on March 16, bound for San Sabá. But three days' journey from the presidio they got lost. They soon were discovered by a large number of mounted enemy Indians. The trio fled into a stream, which seems to have been the San Sabá, eluding their enemies by traveling in the stream. They followed the river, still lost, for six days, ultimately reaching and recognizing the ford near the presidio. Two of their horses had died from being run so much, and the third, loaded with their possessions, was left at this spot so that they could slip unnoticed into the presidio. They had encountered the enemy four times at different places along the river, and they had climbed the hill to see if it was safe to enter the presidio. The men's feet were badly blistered and they were exhausted, but undoubtedly delighted to have reached safety (Rábago, 4/22/1757).

The summer of 1767 did not carry out the promise of the spring, being a quiet though no doubt an ominous one for the soldiers at San

Sabá and the missionaries at San Lorenzo. It was during this summer that Marqués de Rubí officially inspected the missions and the presidio. Rubí had been dispatched in 1766 by the new Spanish king, Charles III, to visit and inspect the entire Spanish frontier from the Gulf of California to Texas. There had been no general inspection of frontier posts for more than 30 years and it seemed likely that a realignment of Spanish forces in this remote region was desirable. Rumors of profiteering by presidial commanders at the expense of their soldiers had come to the king's attention. Rubí was to report on the nature and location of each presidio, the condition of each garrison, the prices presidial commanders were charging soldiers for supplies and equipment, and he was to make recommendations for future policy and action (Castañeda, 1939: 223). Rubí, accompanied by Nicolás de Lafora, his captain of engineers and assistant, left Mexico City in March, 1766. They first visited New Mexico, then California, returning to Monclova, Coahuila, in June, 1767. They soon began inspection of Texas, and on July 14 crossed the Rio Grande at or near the site of modern Del Rio. In making the crossing two horses and a Pausan (Coahuiltecan) Indian drowned. The party struck Las Moras Creek four leagues to the northeast and followed it to its source. Here, at Las Moras Springs, located on the present Fort Clark Guest Ranch at Bracketville, they camped (Weddle, 1964: 167). On July 18 they resumed their journey, heading northeasterly toward the Nueces Valley. They first visited the abandoned Nuestra Señora de la Candalaria, Lafora saying that

... on the banks of a small arroyo of very fresh and clear water, there was a house with its little chapel and in front of it a large hut constructed by Lipanes. The Fernandine missionaries flattered themselves that they would be able to induce these Indians to live in this place. They never did it and the Lipanes only laughed at the zeal and credulity of the friars (Kinnaird, 1958: 147).

The next day they crossed the Nueces, Lafora continuing:

We forded it in very little water but its bed shows how furious its current must be at flood. Taking the road from here to the north we found, at a league and a half, the little pueblo of San Lorenzo de la Santa Cruz, commonly known as the Misión del

Cañon. Its origin and progress are similar to those of Candelaria. It merely keeps a detachment of thirty men and an officer from the presidio of San Sabá occupied, and it maintains two useless missionaries. It has no other function than to be a provisioning point for packtrains which enter with supplies for that presidio [i.e., San Sabá]. Its shape and bad location are shown on the map I drew of this settlement. Here they have two small three-pounder cannon, one of them with its trunnion broken and both mounted on unserviceable carriages. They are without ball of their caliber or implements for their operation (Kinnaird, 1958: 147-148; see also Bolton, 1915: 94-95).

Unfortunately, the whereabouts of Lafora's sketch of San Lorenzo, if it still exists, is unknown, and as the inspecting party left on the twenty-first for San Sabá, nothing more was said about the forlorn little settlement on the upper Nueces.

The situation at the San Sabá presidio had become critical in the spring of 1768. There had been no new Indian attacks, to be sure, but the personnel of the fort, including its commander, could hardly endure the situation any longer. The garrison had long been on skimpy rations and may well have been close to starvation. An epidemic, possibly of nutritional origin, had swept through the fort, soldiers were deserting, and Rábago was ill, suffering from fainting spells. He knew appeals to the viceroy would be fruitless, and finally he recognized that the presidio would have to be abandoned. In June he acted, ordering the entire garrison—soldiers, their wives and children—to abandon it and move to Mission San Lorenzo de la Santa Cruz. They arrived on June 22, apparently after an uneventful trek, since there is no account of accidents, Indian raids, or other untoward events on the journey (Castañeda, 1939: 197-198).

By July 10, Rábago had pulled himself together sufficiently to write a rather pathetic letter to the viceroy, advising him of his unauthorized action and explaining why he had done so. He cited as reasons the lack of provisions partly caused by the harassments of the enemy, the suggestion of Marqués de Rubí that the presidio be abandoned, the desertion of soldiers, the epidemic at the fort, and his own poor health. He called the abandonment a temporary one, but noted that San Lorenzo was more favorably located than San Sabá. In August, Rábago re-

ceived an acid reply from the viceroy, severely reprimanding him and inquiring about the condition in which he had left San Sabá. If Rábago got any satisfaction from the letter, it was that the viceroy had not ordered him to reoccupy the presidio.

On February 9, 1769 Rábago received an order which meant the eventual abandonment of San Lorenzo. He was to send twenty-one men from his garrison to re-enforce the one at San Antonio. This equaled the number of men taken from San Antonio to found San Sabá. Rábago delayed obeying the order, but it mattered little as he was being removed from command, and in fact, his replacement was already on the way. Apparently at San Fernando de Austria in Coahuila, he learned of his removal, meeting there Don Manuel Antonio de Oca, his replacement. The change of command was made April 1, and Rábago wrote the viceroy April 19 acknowledging his removal. Rábago quickly left for Mexico City to report to the viceroy in person and to seek reimbursement for the personal funds he had spent maintaining San Sabá. But the ailing soldier never seems to have reached his destination. He wrote to the viceroy from San Luis Potosí on July 5, 1769 that he was too ill to continue the journey, and requested that he be promoted to the rank of colonel. His subsequent fate is a mystery; this was his last known letter and it is presumed that he died in San Luis Potosí (Castañeda, 1939: 197-199; Weddle, 1964: 178-181).

Captain Oca apparently moved the garrison from San Lorenzo back to the San Sabá presidio, remaining there until early in 1770 when he pulled back to San Lorenzo. On June 1, 1771 Jacobo de Ugarte y Loyola, governor of Coahuila, notified Viceroy Marqués de Croix that five soldiers from the garrison at El Cañon had filed charges against Oca. On June 8, Ugarte wrote that the 29 men of the garrison had been sent to San Antonio. They were not needed there and Ugarte requested that they be sent to San Fernando de Austria. On June 21, 1771 the viceroy ordered removal of the remainder of the El Cañon garrison, marking the final abandonment of the mission (Weddle, 1964: 181-182).

Thus ended the Mission of San Lorenzo de la Santa Cruz and the Spanish effort to convert and pacify the Lipan Apaches. Begun with high hopes by the missionaries and with vigor by the military, their aspirations soon had withered,

their enthusiasm and energy given way to fear and impotence. The failure of the mission has most often been blamed on the Lipans. They have been accused of "treachery" and "perfidy," and of being "faithless," "insolent," and "fickle" because they did not settle permanently at the upper Nueces missions and divest themselves of their Indianness (Castañeda, 1939: 1, 43, 136, 144, 157, 165, 167, 181, 256). But as we have seen, only a few band chiefs actually agreed to settle down to a mission life, and it is doubtful that any of them viewed it as a permanent arrangement. They also had agreed to settle for a price—protection and sustenance. When little of either was provided, any commitment some of the Lipans may have felt dissolved. The Lipans were interested in their own welfare and in maintaining their own customs and way of life; they had never agreed to give them up. Such self-interest was neither treachery nor perfidy.

If responsibility for the failure of the El Cañon mission has to be fixed, it should be blamed on the government of Spain. The missions on the upper Nueces were not officially sanctioned and never given adequate support. With such handicaps they might have failed in the best of times, but they were founded in the worst. Even as San Lorenzo was being established, France was secretly ceding Louisiana to Spain, an act ratified by the Peace of Paris in 1763. No longer was there threat of French encroachment to induce Spanish authorities to aid a remote and struggling mission on the northern borderlands of New Spain. The burden of a vast, inflated colonial empire was heavy. There was neither money nor men to squander in a distant, unpromising wilderness. Spain's day was nearly done in North America, and the El Cañon mission was built in the spent evening of that day.

If perfidy, treachery, and faithlessness are to be ascribed to someone, it should be to the Spaniards, not the Lipans. Marqués de Rubí, among other things, had recommended after his inspection of the frontier posts of Texas that a new Indian policy be adopted. Callous and calculated, perhaps more accurately perfidious and treacherous, Rubí's suggestion was that amicable relations be established with the powerful Comanches and their allies, and that the Apaches be exterminated by the combined might of the

Spaniards and the Comanches. Fortunately for the Lipans, the new policy was not carried out effectively. The Spaniards could never coerce sufficient numbers of Comanches and their confederates into joining them in a major campaign of extermination (Castañeda, 1939: 256–258; 1942: 23; 110–128).

As the destruction of the San Sabá mission and Parrilla's subsequent defeat at Spanish Fort denotes the highwater mark of the Spanish colonial frontier in Texas, so the abandonment of the upper Nueces missions appears to mark the end of the Lipan Apaches as a powerful and decisive factor in the affairs of Texas and northern Mexico. Their raids and thieving were troublesome in subsequent years, but no longer did they threaten the very existence of Spanish settlements and ranches. Lipan numbers must have been much reduced by the end of the mission era, and thereafter the survivors were much scattered. Some bands were reported in southeast Texas in the 1770's where they were in intimate contact with Atakapan tribes, trading and even intermarrying with them. In the 1780's the Lipans were said to be divided into two groups, the Upper Lipans, who roamed Coahuila, Chihuahua, and Trans-Pecos Texas, and the Lower Lipans who ranged from southeast Texas to Nuevo Leon and Tamaulipas (Sjoberg, 1953b: 78–79).

The Mexican Revolution, the settlement of Anglo-Americans in Texas, the Texas Revolution, and the subsequent flood of settlers all contributed to the further decline and dispersion of the Lipans. Americans had no more sympathy or concern for the Lipans than did their Spanish predecessors, perhaps less. By 1865 some Lipans had been driven into Indian Territory where they ultimately settled with their Kiowa Apache relatives; others had joined forces with remnant Tonkawas and they were removed to Indian Territory. Some of the Lipans of Trans-Pecos Texas joined the Mescaleros and settled with them on a reservation in southern New Mexico. Finally, in 1905, a few Lipans who had held out in Coahuila and Chihuahua were removed by the United States government and placed on the Mescalero Reservation (Hodge, 1907: 768–769; Sjoberg, 1953b: 79–80).

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PART III

SUMMARY AND CONCLUSIONS

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The archeological investigation of Mission San Lorenzo de la Santa Cruz revealed a complex of more than fourteen structures arranged around a plaza. In the relatively few years the mission was occupied, the Spanish accomplished a massive construction project, using thousands of tons of adobe bricks and limestone building blocks. The first buildings—the church, sacristy, and priests' quarters—were carefully oriented to the cardinal directions and were more sturdily built than later structures. The later buildings lie in a slightly different orientation and have walls built of stones and adobe bricks made of dark soil acquired at the site. There is also some evidence that the Spaniards built the walls of the Indian cabins which faced the plaza of stone to resemble the durable construction of the priests' quarters, but built the more vulnerable outer walls of more readily available dark dirt adobe. With the exception of handmade iron nails, all construction material was locally derived—adobe mud, limestone slabs, oak and juniper timbers, lime made from the local limestone in a nearby kiln, and sand, gravel, and cobbles from the Nueces River.

San Lorenzo's buildings were generally kept in good repair as evidenced by double floors in several structures and multiple layers of wall plaster in the granary and other buildings. Official structures such as the church, sacristy, and granary were kept clean; no debris littered their floors. Trash from the Spanish occupation was thrown just outside the walls, mainly from the bastion and the other structures whose roofs were easily accessible. The floors of the Indian houses were littered with several inches of food remains and other trash. The interior walls of the church were painted with colored murals. Numerous burials were placed under the floor of the church, and in many instances later

burials were placed within earlier burial pits disturbing their remains.

Although a relatively small number of people occupied San Lorenzo for less than a decade, a vast quantity of potsherds, perhaps in excess of 90 thousand, was deposited in the mission middens. Many of these ceramic vessels originated a great distance from the site—majolica from Puebla in central Mexico, olive jars from Spain, glass beads from Venice, salt-glazed stoneware from England, faience from France, and porcelain from the orient. Some non-wheel-made pottery was locally made by the Lipan Apaches. Metal artifacts were much rarer than ceramics. Handmade iron nails occurred in relatively small quantities. Brass vessels were frequently patched many times and some of the patches were patched. There was a striking absence of metal gun parts.

Food bones in the Indian houses suggest continued reliance on local game animals, and the large quantity of seeds found in the stomach region of one of the Indian burials confirms the documentary evidence that prickly pear fruit was consumed. The relatively large amount of flint detritus found on the floors of several of the structures indicates that the Apaches retained many of their aboriginal crafts. A number of flint scrapers, small-flake knives, and at least one triangular arrow point represent some of the flint tools which were still in use. It is probable that they also manufactured many of the gun-flints used by the Spaniards of the mission.

When San Lorenzo was abandoned, the roofs of the structures were burned and fell to the surface of the floors. Some of the burials made in the floor of the church were apparently removed at this time. Those Indians who were buried in the church were dressed in Spanish-supplied homespun cloth and accompanied by religious

medallions or crucifixes and small strands of colorful glass trade beads. There is some evidence that the Apaches returned to San Lorenzo, or other Indians visited the site, after its abandonment. They camped within the walls of some of the rooms, leaving the remains of campfires and other traces of their presence.

The ethnohistorical investigation of Mission San Lorenzo de la Santa Cruz attempted to describe the situation and events which led to the founding and failure of the mission, and to relate as fully as possible the year by year story of the mission itself. The Spanish established the missions on the Nueces for several reasons: as a means of pacifying the Apaches whose attacks along the northern frontier had been serious, as a way of maintaining control of the northern frontier in the face of the French and Indian threat, and to convert heathen savages to Catholicism. Some bands of Lipans were ready to try out mission life because they were hard-pressed by their Indian enemies, and they needed the protection and succor they believed the Spaniards could give.

In response to Lipan demands and at a place partly dictated by their desires, Mission San Lorenzo de la Santa Cruz was established in the winter of 1762. The mission was not officially sanctioned, but it could depend upon the help of the relatively nearby missions on the Rio Grande for at least a short time. A second mission, Candelaria, was soon afterward established below San Lorenzo on the Nueces River. The missionaries were determined and industrious, and at first viewed their chances of converting the Lipans to be good. The commander of the San Sabá Presidio, while not as optimistic, did everything he could to make the mission a success, including stationing soldiers at the missions. The erection of buildings and the preparation of a field for crops at San Lorenzo proceeded swiftly with the help of Indians brought from the Rio Grande missions. But within a year hopes for a successful mission were dimmed. Enemy Indians had already attacked a Lipan ranchería in the vicinity, disaffected Lipans had spread false rumors about the malevolence of the missionaries, and the missions did not have enough food for the Indians who had settled at them, with the result that they had to be allowed to leave on hunting and gathering ventures. Other Lipans who might have been drawn into the

missions could not be for lack of food and other supplies.

In 1763 the missionaries said that the Lipans were becoming more receptive to Catholicism. But a smallpox epidemic in 1764 wiped out a considerable number of mission Lipans, perhaps those most amenable to missionary persuasion. About this same time the Lipans experienced a nativistic revival, which was hostile to the mission movement and the Spaniards in general. How widespread this social revulsion was is not known, though the fact that the missionaries acknowledged it probably indicates that it was extensive enough to be harmful to their efforts. The missions remained unsanctioned and poor and the Indians increasingly reluctant to remain in them, though construction continued at San Lorenzo. In October 1766, San Lorenzo itself was attacked by enemy Indians; nearby Candelaria had already been abandoned. In November San Lorenzo was again attacked, again unsuccessfully. During this same period the San Sabá Presidio was coming under increasing pressure from the Comanches and their allies. By 1767 few if any Lipans remained at San Lorenzo; it had become merely a way station between the Rio Grande and San Sabá. In the spring of 1768 Rábago abandoned San Sabá and retreated with what remained of his garrison to San Lorenzo. Rábago was soon replaced, and undoubtedly the two missionaries soon left, though the date of their departure is unknown. In the spring of 1771 the final abandonment of the mission was ordered.

That joint archeological and ethnohistorical investigations, such as this one, are much more fruitful than either would be alone is obvious, but nonetheless merits comment. Archeological investigations sometimes seem mute and sterile in the sense that they become estranged from the loving, gossiping, quarreling people who used the pots and loosed the arrows, the remains of which the archeologist finds. The potsherds and arrowpoints are reduced to arid inanimate objects to count and to compare, to fondle and to hoard. Ethnohistorical investigations, on the other hand, are all too human in the sense that those who chronicle events, as well as those who employ such chronicles, view the events and the accounts of such events through the crazed looking glasses of their own experiences and biases. Events filtered through these faulty prisms seem

sometimes to have the objective reality of a passing dream. In short, in a dual approach each kind of investigation enriches the other—the potsherd takes on life, the historic happening becomes grounded in the reality of concrete objects—and the combination leads to a more accurate grasp of a vanished past.

Time and again in the course of our study one kind of information, by itself enigmatic and puzzling, when viewed against the other kind of data added up to new and more positive knowledge about some aspect of San Lorenzo. The archeological investigation, for example, revealed two kinds of construction of the mission, distinguished by the geographical orientation of the buildings and the sturdiness of their construction. By itself this was equivocal data from which no conclusion could be drawn. But documentary information left no doubt but that the initial construction was more carefully planned and soundly executed than were the later structures, reflecting a vigorous initial enthusiasm which soon waned. The last of the well-built structures, though partly oriented like the later ones, was the granary, and the one after which Father Jiménez promised the Indians he would copy their houses. Whether he intentionally deceived them or whether he was simply unable to keep his promise is unknown. In any case, their houses superficially resembled the granary but were in fact inferior to it. In short, joint investigations revealed not only the chronological order of construction, the reasons for differences in construction, but even raise questions about the attitudes the missionaries held about the Lipans.

Joint investigations also appear to reduce the likelihood of making hasty judgments. The quantity of ceramics found in the San Lorenzo middens, for example, might lead one to assume erroneously that the mission was populous, well-supplied, and inhabited for a considerable period of time. The historic sources and other archeological evidence reveal that this was not true. The explanation would seem to be partly that ceramics were relatively cheap and easily obtainable even in this isolated, frontier mission. The fact that the entire garrison of the San Sabá Presidio totaling several hundred persons was pulled back to San Lorenzo in June, 1768, to remain there at least until the following spring, also may have much to do with the plentiful ceramics. The relative scarcity of metal artifacts,

particularly the remains of firearms, is probably more indicative of the wealth and condition of the mission.

Similarly, the archeological evidence sometimes provides a background of facts against which the allegations of various historic figures may be judged. Nicolás Lafora, Rubí's engineer and assistant, for example, visited Candelaria and San Lorenzo in their declining years. If his comments about the missions and missionaries were all we had to go on, it probably would be concluded that the missions were poorly located, indefensible mud hovels, operated by incompetent missionaries. But archeological evidence indicates that San Lorenzo was well located and relatively well built. It was certainly defensible, since it easily survived two attacks. On these occasions the two cannons, which Lafora described as virtually useless, played important roles in repulsing the attackers. Consciously or unconsciously Lafora distorted the facts. Knowing this, the possibility that Rubí had decided that the Apaches should be abandoned and the Spanish alliances rearranged by the time he visited the missions is immediately raised. If such was the case, Lafora's comments become readily comprehensible as those of an employee laboring in the cause of his superior.

The primary intent of the archeological investigation of San Lorenzo de la Santa Cruz, of course, was to discover what an eighteenth century Spanish mission on the northern border of New Spain was like. A secondary aspiration was to learn the nature of the archeological remains of the Lipan Apaches, perhaps finding some trait or complex of traits which would serve to distinguish them from others. While the major purpose of the investigation was achieved, lack of time prevented any concerted attempt to satisfy the second. Nevertheless, a number of salient facts about the Lipans emerged. The identifiable Indian remains in San Lorenzo are few relative to artifacts of European manufacture, as was to be expected. Surprising, however, was that the Lipans, who had been directly and indirectly exposed to European civilization for almost two hundred years and had obtained various European tools and trinkets, retained so many of their aboriginal crafts. The relatively large amount of flint detritus found on the floors of several structures suggests this, as does a number of flint scrapers, small-flake knives, and at least one tri-

angular arrowpoint. Though only a small amount of locally non-wheel-made Indian pottery was found, it is significant in that it is similar to that made by earlier Plains Apache groups of the Dismal River Aspect, and it is the best single item discovered which might serve to identify Lipan archeological remains.

The Indian burials placed under the floor of the church were probably Lipan, but it is barely possible that some could have been the bones of Coahuiltecan Indians the missionaries brought from San Juan Bautista and San Bernardo to labor in the fields, build the irrigation ditches, and perform the other tasks the Lipans could not or would not do. The fact that eleven of seventeen persons interred under the floor were women and children argues that they were Lipans, since the missionaries apparently imported only men from the Río Grande missions (Jiménez and Cuevas, 2/25/1763). The absence of old adults (the oldest is a forty year-old woman; see Appendix A) may be meaningful, but the size of the sample is too small to do more than raise some possibilities. A smallpox epidemic, such as the one that ravaged the Lipans in 1764, for example, would probably strike hardest at the age groups represented by the burials. Since some later burials cut into or through earlier ones, however, it seems likely that the church floor was used as a cemetery over a con-

siderable period of time, probably throughout the mission's life. It is also possible that the young people were for one reason or another more attracted to mission life than older people, and there may be other plausible explanations for the absence of older people in the burials. The most curious aspect about the burials in the church floor is that those in the northern half were dug up and removed, presumably when the mission was abandoned, but those in the southern half were untouched. Again several explanations come to mind, chief of which is that the Spaniards who died at San Lorenzo were dug up and removed for reburial elsewhere, while the Indians were allowed to remain.

Finally, despite the considerable length of this report, it should be made explicitly clear that we do not regard it as the final word on the archeology or ethnohistory of San Lorenzo de la Santa Cruz or the Lipan Apaches. An archeological investigation of the vicinity around San Lorenzo, for example, might be very productive to our knowledge of Lipan archeology. Similarly, we are quite confident that there are many documents, undiscovered by us, which bear on the history and ethnology of the Lipans. We hope, then, that this investigation marks the beginning of inquiry into a fascinating subject, not its culmination or conclusion.

APPENDIX A

Burials from Mission San Lorenzo de la Santa Cruz

BY THOMAS W. MCKERN

The 10 burial pits in the floor of the church (Structure 2, Figure 11) contained the skeletal remains of at least 17 individuals (nine adults, three adolescents, and five infants) as follows:

Burial 1. One adult skeleton, and disarticulated fragment of a child skeleton in one corner of the grave.

Burial 2. Fragmentary remains of an adult skeleton.

Burial 3. A few teeth and the fragmentary remains of an adult skeleton.

Burial 4. Part of an articulated infant skeleton, disturbed by Burial 6.

Burial 5. Articulated child skeleton, complete.

Burial 6. Partially articulated fragments of an adult skeleton.

Burial 7. Articulated child skeleton, right leg removed by Burial 5.

Burial 8-1. Articulated adult skeleton, lower legs removed by Burial 9-1. Some infant bones scattered in pit.

Burial 8-2. Disarticulated adult skeleton in pit with Burial 8-1, apparently complete.

Burial 9-1. Articulated adult skeleton, left arm and most of left side missing because of another burial pit. The lower legs were not collected. Some infant bones were also in pit.

Burial 9-2. Articulated adult skeleton. Some infant or child bones scattered in pit. Almost complete infant skull beside adult skull.

Burial 10. Complete articulated adult skeleton with disarticulated infant skeleton near head.

METHODS

Of the nine adults excavated from burial pits at San Lorenzo, only six are complete enough for metric and comparative analysis. The adolescents and infants are not included in this study. Although much time and effort was spent in reconstructing the individual skeletons, only two of the six can be considered to be absolutely complete. The measure-

ments and observations used are standard and can be found in Montagu (1960). Age identification follows the techniques of McKern and Stewart (1957) while stature was calculated by the revised formulae of Trotter and Gleser (1958).

INDIVIDUAL DESCRIPTION

A general description of each individual in this series represents the results of detailed metric and morphological observations of the available material. Because of the fragmentary nature of the postcranial material, only the cranial measurements have been reproduced. These can be found in Fig. 77.

Fig. 77. Tabulation of cranial measurements and indices for the San Lorenzo sample.

	No.	Range	Mean	Standard Deviation
<i>Length</i>				
San Lorenzo				
Male	1	168-	168.0	....
Female	2	170-176	173.0	4.24
<i>Breadth</i>				
San Lorenzo				
Male	1	136-	136.0	....
Female	2	132-133	132.5	.71
<i>Basion-Bregma</i>				
San Lorenzo				
Male	1	137-	137.0	....
Female	2	129-134	131.5	3.54
<i>Porion Height</i>				
San Lorenzo				
Male	2	114-120	117.0	4.24
Female	2	113-114	113.5	.71
<i>Minimum Frontal</i>				
San Lorenzo				
Male	2	89-91	90.0	1.41
Female	3	87-93	90.0	3.00

<i>Bizygomatic</i>				
San Lorenzo				
Male	1	132-	132.0	....
Female	2	120-126	123.0	2.42
<i>Nasion-</i>				
<i>Prosthion</i>				
San Lorenzo				
Male	1	73-	73.0	....
Female	2	66-70	68.0	2.83
<i>Nasal Height</i>				
San Lorenzo				
Male	1	52-	52.0	....
Female	2	47-52	49.5	3.54
<i>Nasal Breadth</i>				
San Lorenzo				
Male	1	25-	25.0	....
Female	3	23-30	26.3	3.51
<i>Basion-</i>				
<i>Prosthion</i>				
San Lorenzo				
Male	1	101-	101.0	....
Female	2	85-88	86.5	2.12
<i>Nasion-</i>				
<i>Subnasale</i>				
San Lorenzo				
Male	1	90-	90.0	....
Female	2	78-84	81.0	4.24
<i>Basion-Nasion</i>				
San Lorenzo				
Male	1	98-	98.0	....
Female	2	94-94	94.0	.00
<i>Palate Breadth</i>				
San Lorenzo				
Male	1	70-	70.0	....
Female	2	58-58	58.0	.00
<i>Palate Length</i>				
San Lorenzo				
Male	1	57-	57.0	....
Female	3	51-54	52.3	1.53
INDEX:				
<i>Cranial</i>				
San Lorenzo				
Male	1	81.0-	81.0	....
Female	2	75.6-77.6	76.6	1.41
<i>Mean Height</i>				
San Lorenzo				
Male	1	90.1-	90.1	....
Female	2	83.5-88.7	86.1	3.68
<i>Nasal</i>				
San Lorenzo				
Male	1	48.1-	48.1	....
Female	2	48.9-50.0	49.4	.78

* Catalogue numbers, Department of Anthropology, Osteological Laboratory, University of Texas at Austin.

Burial 8-1 (2153*) represents an adult male approximately 30 years of age. These remains are almost complete and in excellent condition. The skull is high (from porion to bregma) and round (a brachycranic index of 81.0). It is fairly small for a male (cranial capacity of 1350 cc.) but the supra-orbital ridge is pronounced. The face is long and narrow (a leptoprosopic index of 91.7) with round orbits. The mandible is rugged and the mastoid processes are pronounced. Most of the dentition is present. Wear is medium, as is shovel-shaping of the maxillary central incisors.

The postcranial skeleton is that of an individual of medium height (5' 5") and medium musculature. The only pathology is slight arthritic lipping on the anterior rims of the vertebral centra in the lower lumbar area.

Burial 8-2 (2154) consists of a badly warped skull in fair condition and fragmentary postcranial material. It represents a young adult female, approximately 19 years of age. Due to cranial distortion, very few measurements or observations are reliable. Most of the maxillary and mandibular dentition are present. Very little wear is demonstrated, and the third molars have not yet erupted. No pathology was observed.

The postcranial skeleton is that of a short (5' 2"), gracile individual. The shafts of the right fibula and right tibia are thickened at about the same level, indicating a healed fracture of both bones.

Burial 1 (2155) consists of a skull in good condition and the complete postcranial skeleton. An adult female, approximately 30 years of age, the skull is small (a cranial capacity of 1250 cc.), fairly round (a high mesocranic index of 75.6), and low (the auricular head height is 113.0). Facial dimensions show a narrow, fairly long face. The mandible is typically female with pointed chin and inverted gonial angles. Most of the maxillary and mandibular dentition are present with evidence of caries in both upper and lower molars. The maxillary central incisors exhibit pronounced shovel-shaping.

The postcranial skeleton is that of an individual of slight build with a stature of about 5' 1". No pathology was observed.

Burial 9-1 (2156) consists of a fragmentary remains of an adult male approximately 35 years of age. Measurements and observations were limited, but the scant data indicates an individual of medium build with a stature of about 5' 6". No pathology was observed.

Burial 9-2 (2158) consists of the fragmentary remains of an adult male, 30 to 35 years of age. The general condition of these remains is poor and what remains of the skull is so badly warped that reliable measurements are impossible. Stature was calcu-

lated from right and left humeri only and indicate an individual of medium stature (5' 5"). No pathology was observed.

Burial 10 (2162) is represented by the complete remains of an adult female, approximately 40 years of age. The skull is small but high (a hypsicranic index of 88.7) and round-headed (a high mesocranic index of 78.0). The face looks wider than it actually is, due to the narrowness of the mandible (a hyperleptoprosopic index of 98.3). There is a noticeable alveolar prognathism and the teeth demonstrate an even bite. Both maxillary central incisors show extreme shovel-shaping. One apical cavity was observed in the lower right second molar.

The postcranial skeleton indicates an individual

of medium build with a stature of 5' 1". Pathology was represented by slight lipping of the anterior rims of the lower thoracic and upper lumbar elements. It is interesting to note the similarity between this female and that from Burial 1 (2155).

SUMMARY

Though small, the sample indicates a Mongoloid people of short stature, with round, high heads, narrow faces, and narrow palates. Body build is generally slight. Very little pathology was observed. Arthritic lipping in the lumbar vertebrae and a few carious teeth represented the total record of skeletal disease.

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APPENDIX B

Vertebrate Remains from San Lorenzo de la Santa Cruz

BY GERALD G. RAUN

Vertebrate remains were present in samples from 10 of the 14 excavated structures (Fig. 78). A considerable amount of bone was also recovered from the surface and the middens, the latter providing about 35 per cent of the total sample. The distribution of bone among the structures was not random. Structure 13 contained more than twice as much bone as any of the other structures.

Distribution of bone by Features

Feature	Number of bones	Per cent of sample*
Midden	937	35.1
Surface	589	22.1
Structure 13	475	17.8
Structure 11	182	6.8
Structure 7	170	6.4
Structure 14	118	4.4
Structure 8	98	3.4
Structure 12	46	1.7
West wall area	26	1.0
Structure 10	10	.4
Structure 1	6	.2
Structure 4	5	.2
Structure 2	4†	.2
Structure 3	0	0
Structure 5	0	0
Structure 6	0	0
Structure 9	0	0
Gate area	0	0
Total	2,666	99.7

* To the nearest one-tenth of one per cent.

† Bones from outside of wall.

Much of the bone from the surface and some from the midden area is obviously recent. None of the samples from other features give much evidence of recent contamination.

The vast majority of the bone recovered is postcranial material, making identification of species

difficult. Only 1,135 of the total of 2,666 bone fragments were identifiable with any reasonable degree of accuracy. The unidentified fragments are about 95 per cent mammalian.

Fish bones were second only to mammal bones in abundance, representing 39 per cent of the identifiable material, but they were a much smaller percentage of the total since most unidentified fragments were mammalian. No attempt was made to identify the fish beyond noting that catfish (*Ictalurus* sp.) were included. Reptile bones were very scarce. Two fragments of turtle shell and four snake vertebrae were noted. It is probable that these may represent recent contamination since they were not found in the structure fills. Bird remains comprised 18 per cent of the identifiable sample, and 37 per cent of the bird bones were identified as turkey (*Meleagris gallopavo*). Quail probably are represented also, although a definite identification could not be made. Two species of quail, bobwhite (*Colinus virginianus*) and scaled (*Callipepla squamata*), presently occur in this area. At least one small passeriform bird is also present in the sample.

The bulk (42 per cent) of the identifiable bone is mammalian and most of this (84 per cent) is referable to a composite group of artiodactyls—deer, sheep, goat, and antelope. The whitetail deer (*Odocoileus virginianus*) and the pronghorn antelope (*Antilocapra americana*) are native species. The latter does not occur in the area now but formerly did. The whitetail deer is now abundant. Sheep and goats are not native species and indicate the presence of domesticated animals in abundance. Specific identification was made on the basis of teeth and the low frequency of occurrence of such material precludes any analysis of the relative abundance of the various species. No attempt was made to identify all of the postcranial elements to species, but the material was examined rather closely. Sheep and goats seem to have been more abundant, while deer and antelope formed only a relatively minor part of the sample. The indications

are that the inhabitants were making little use of the game species and were primarily utilizing the domestic stock for food. This implication is further strengthened by the scarcity of bones of other mammals. Cattle and bison are included, but much less commonly than sheep, goats, deer, and antelope. The identification of bison material is tentative, based on postcranial fragments which appear too large for cattle. Rabbits, usually abundant in the area and a ready source of food, are represented by only seventeen jaw fragments. At least two rabbits,

a cottontail (*Sylvilagus* sp.) and the jackrabbit (*Lepus californianus*) were eaten.

Other mammals present include: 1) opossum (*Didelphis marsupialis*)—from surface material and probably of recent origin; 2) *Canis* sp.—probably a small dog, possibly a coyote but too fragmentary to be certain; 3) striped skunk (*Mephitis mephitis*)—a complete skull unquestionably of recent origin; 4) peccary (*Tayassu tajacu*)—a jaw with teeth confirms the presence, and several toe bones are questionably referred to this species; 5) horse (*Equus* sp.)—represented by two teeth.

Fig. 78. Provenience of food bones.

	bison-cow	deer	goat	sheep	antelope	deer-goat sheep-antelope	horse	pig	dog	opossum	rabbit	carnivore	turkey	bird	turtle	reptile	fish	unidentified	Total
Structure 1																			
floor	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	4	6
Structure 2																		4	4
outside	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Structure 4																		5	5
floor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Structure 7																			
floor	..	..	..	..	..	4	..	..	..	..	1	..	..	..	..	..	..	17	..
fill	3	..	..	2	..	6	..	..	..	..	1	..	1	5	..	..	8	122	170
Structure 8																			
floor	..	..	..	..	..	20	..	1	..	..	..	..	1	1	..	..	..	62	..
fill	1	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	..	2	..
outside	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	98
Structure 10																		8	..
floor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
fill	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	10
Structure 11																			
floor	2	..	..	..	..	7	..	1	..	..	..	..	10	..	..	..	3	30	..
fill	..	..	..	..	..	9	..	..	..	..	..	..	..	29	..	..	3	70	..
outside	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	182
Structure 12																			
floor	2	..	..	..	..	6	..	..	..	..	2	..	..	..	..	..	..	26	..
fill	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	2	46
Structure 13																			
floor	1	2	4	..	..	65	..	1	..	..	..	..	21	8	..	..	110	194	..
fill	..	..	..	..	..	7	..	..	..	..	..	..	1	..	..	..	47	14	475
Structure 14																			
floor	1	1	..	..	..	31	..	..	..	..	1	1	13	..	..	..	20	50	118
Surface	14	3	17	1	..	93	1	..	..	2	11	..	8	55	..	..	14	370	589
Midden	16	..	8	3	4	92	1	3	2	..	1	..	18	29	2	..	239	519	937
W.Wall area	1	..	..	..	..	7	..	..	..	..	..	..	3	1	..	..	..	14	26
Totals	42	6	29	6	5	363	2	6	2	2	17	1	76	128	2	3	445	1,531	2,666

